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THE ECONOMICS OF DAIRY MARKETING

AN ANNOTATED BIBLIOGRAPHY

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FOREWORD

This bibliography should be used jointly with a companion work: Wolf, A. F., A BIBLIOGRAPHY ON COSTS, MARGINS, AND EFFICIENCY IN MARKETING DAIRY PRODUCTS, unnumbered publication, Economic Research Service, Mar. 1965. The two bibliographies cover different areas of dairy marketing. It is not known if the publications listed herein are still available from the publishers. The Department of Agriculture has supplies available of many recent Department publications; most others may be found in major libraries. Those issued elsewhere should be requested from the publisher.

Listings of items overlooked, particularly if accompanied by an abstract, will be welcomed by the Animal Products Branch, Marketing Economics Division, Economic Research Service, U.S. Department of Agriculture, Washington, D.C. 20250. When sufficient additions are received, a supplement to the bibliography will be issued.

The following bibliographies were extremely helpful in preparing this bibliography:

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July 1966

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	<u>Butter</u>	<u>Cheese</u>
	<u>1,000 lb.</u>	<u>lb.</u>
Big Five.....	90,445	78,768
Swift interests	38,758	28,692
Armour interests	28,884	28,966
Morris interests	7,462	7,612
Wilson & Co., Inc	7,555	6,515
Cudahy Packing Co	7,787	6,982
All other.....	3,894	5,138

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- | | <u>Handlers</u> | <u>Producer-dealers</u> |
|-----------|-----------------|-------------------------|
| Jan. 1935 | 11 | 34 |
| Dec. 1935 | 9 | 30 |
| Jan. 1936 | 9 | 29 |
| Jan. 1937 | 8 | 30 |
| Jan. 1938 | 8 | 24 |
| Dec. 1938 | 9 | 20 |
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Volume of milk utilized in each class by 4 largest handlers (National Dairies subsidiaries, Borden Co. subsidiaries, Dairymen's League, and Queensboro Farm Products, Inc.), by months and by class of milk, 1940-March 1941. 1940, 56.9 percent of Class I sales by 4 largest.

U.S. Department of Agriculture. MILK MARKETING IN MASSACHUSETTS SECONDARY MARKETS. PART I.--SPRINGFIELD, November 1945, 29 pp. PART II.--WORCESTER, November 1945, 29 pp. PART III.--LOWELL-LAWRENCE, January 1946, 26 pp. PART IV.--FALL RIVER, February 1946, 26 pp. PART V.--NEW BEDFORD, January 1946, 26 pp. PART VI.--MARKET SUMMARY, March 1946, 44 pp. U.S. Prod. and Mktg. Admin. in coop. with Bur. Agr. Econ., New England Res. Council on Mktg. and Food Supply, and Mass. Agr. Expt. Sta. Number, types and size of producers and handlers; seasonality of production; sales of Class I milk; per capita milk consumption; balance of receipts and disposition; prices and subsidy rates.

U.S. Federal Trade Commission. REPORT...ON THE SALE AND DISTRIBUTION OF MILK PRODUCTS. CONNECTICUT AND PHILADELPHIA MILKSHEDS. 74th Cong., 1st Sess., House Doc. 152, 901 pp., 1935.

June 1934, Hartford (city only): total sales 1,619,493 quarts. Bryant and Chapeman and R. G. Miller (sub. of National Dairies) sold 646,836 quarts, 39.9 percent of total. Sixty-six producer-distributors, 31 merchant dealers, 45 subdealers. Total 142. New Haven, National Dairies 30.5 percent of total (excluding suburbs) Connecticut, National Dairies 14.7 percent of total.

U.S. Federal Trade Commission. INDUSTRIAL CORPORATION REPORTS. MILK AND MILK PRODUCTS CORPORATIONS. 18 pp. Dec. 21, 1942.

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U.S. Federal Trade Commission. MILK DISTRIBUTION, PRICES AND SPREADS. Corp. (Rpt. 45, 1943.

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Welden, William C. and T. G. Stitts. COOPERATIVE MILK MARKETING IN LOUISVILLE. Farm Credit Admin. Bul. 32, 88 pp., Apr. 1939.

Thirty pasteurizing dealers and 50-60 producer-distributors. Producer-distributors 2.5 percent of milk. Largest dealer 30 percent of fluid milk business of city; 6 largest dealers 65 percent of fluid milk business of city; 70 percent wholesale.

- West, George A. and Leland Spencer. SALES OF MILK AND CREAM IN ROCHESTER, NEW YORK. Farm Econ. Cornell Univ., No. 81, p. 1960, June 1933.
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- West, George A. and Leland Spencer. THE SUPPLY AND SALES OF MILK AND CREAM IN ROCHESTER, NEW YORK, 1930-1936. Cornell Univ. Farm Econ. 101: 2480-2484, May 1937.
Includes number of farms under Rochester inspection, the average daily supply of milk and cream, the average daily sales of dealers selling, and quantity of special milk products sold in November of each year. The number of dealers selling each grade of milk and cream, and the daily consumption of milk and cream per capita are given also.
- Whitaker, George M. THE MILK SUPPLY OF BOSTON AND OTHER NEW ENGLAND CITIES. U.S. Dept. Agr. Bur. of Anim. Indus. Bul. 20, 37 pp., 1898.
Description of milk marketing practices in 1897 and their development; 7 "contractors" (wholesalers) handled about three-fourths of the milk; the remainder was bought from near-by producers by peddlers; contractors used a classified pricing system, negotiated with the Milk Producers Union; milk was sold by peddlers in 2-quart tin cans delivered to homes.
- Wilcox, Emery C., Orville E. Krause, and Lawrence Brereton. UTILIZATION OF WISCONSIN MILK. Wis. State Dept. Agr. Crop Rptg. Serv. Spec. Bul. 3, 113 pp., June 1950.
Trends in Wisconsin dairying; utilization of milk by counties; number of plants of each type and production by counties, 1885-1949.
- Williams, Sheldon W. SUPPLIES AND USE OF MILK IN ALABAMA. Ala. Expt. Sta. Bul. 282, 86 pp., June 1952.
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Local Fluid Milk Markets

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McBride, C. G. and R. W. Sherman. PRODUCER MILK DELIVERIES AND DEALER SALES IN THE CINCINNATI AND DAYTON MILK MARKETS IN 1940 AND 1941. Ohio Agr. Expt. Sta., Supplement to Bul. 131, Part IV, March 1942, 29 pp.

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Describes the changes in milk utilization in the Portland milkshed caused by the rapid population increase during 1940-50. The growth of population exceeded expansion in milk production, resulting in the sale of a greater proportion of milk for fluid milk and ice cream. This required extension of milksheds, changes in the pattern of farm marketing, and adjustments in the location of manufacturing facilities.

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- Sherman, R. W. and C. G. McBride. A MARKET ANALYSIS OF FARM SALE OF MILK TO DEALERS IN FOUR OHIO CITIES. Ohio Agr. Expt. Sta. Bul. 498, 37 pp., Feb. 1932.
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- Stelly, Randall and Kenneth McKinney. TRENDS IN THE SALE OF MILK IN NORTH TEXAS. Tex. Agr. Expt. Sta. MP-287, 12 pp., July 1958.
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- Stelly, Randall and Kenneth McKinney. UTILIZATION OF MILK IN SAN ANTONIO AND CENTRAL WEST TEXAS. Tex. Agr. Expt. Sta. MP-388, 13 pp., Nov. 1959.
Trend and seasonal patterns in sales of various fluid products, containers. 1952-58.
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- Tedford, J. R. and F. R. Taylor. FLUID MILK UTILIZATION AND DISPOSITION, RHODE ISLAND, 1950-51. R.I. Agr. Expt. Sta. Bul. 318, 41 pp., Mar. 1954.
- Tennant, J. L. NEWPORT CITY MILK MARKET. R.I. Agr. Expt. Sta. Bul. 292, 35 pp., May 1944.
Demand; milk receipts; sales by classes; prices; health regulations.
- Tennant, J. L. THE PROVIDENCE MILK MARKET. R.I. Agr. Expt. Sta. Bul. 301, 54 pp., Dec. 1947.
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- Tetro, Robert C., J. R. Hanson, and P. L. Miller. STATEMENT CONCERNING THE LOUISVILLE MILK MARKET AND A PROPOSED MARKETING AGREEMENT AND ORDER. U.S. Dept. Agr. Div. of Mktg. and Mktg. Agreements, Dairy Sect. 147 pp., Jan. 1940. Prices and margins, 1922-1939. Organization of market; classification; price levels; supply conditions; utilization of milk, June 1934-39.
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- Tipton, E. Linwood and Stephen F. Whitted. MISSOURI DAIRY MARKETS. PART II. SOUTHEAST. Mo. Agr. Expt. Sta. Res. Bul. 674B, July 1958, 39 pp. Potential milk supply; relation to the industry of the State, characteristics of the area milk supply; markets for finished products; existing plants--capacity and ownership.
- Ulrey, Orion. THE KALAMAZOO MILK MARKET. Mich. Agr. Expt. Sta. Spec. Bul. 300, 44 pp., 1939. The Kalamazoo milk market was relatively stable, compared with most other Michigan milk markets in 1927-38. Describes the facilities, institutions, and marketing practices in sections dealing with distributive channels and competition, and production and utilization of milk in the area; inspection of quality of milk; the Kalamazoo Milk Producers Cooperative--its organization, control, management, financing, operations, functions, and accomplishments; distributors; distribution for welfare and schools; the Federal marketing agreement and license; and milk prices and price plans.
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- U.S. Department of Agriculture. MILK MARKETING IN MASSACHUSETTS SECONDARY MARKETS. PART I. SPRINGFIELD, 27 pp., Nov. 1945. WORCHESTER, 29 pp., Nov. 1945. PART III, LOWELL-LAWRENCE, 26 pp., Jan. 1946. PART IV, FALL RIVER, 26 pp., Feb. 1946. PART V, NEW BEDFORD, 26 pp., Jan. 1946. PART VI, FIVE MARKET SUMMARY, Mar. 1946. 44 pp. U.S. Prod. and Mktg. Admin., Bur. of Agr. Econ., New England Res. Council on Mktg. and Food Supply, and Mass. Agr. Expt. Sta., coop. Numbers, types, and sizes of producers and handlers; seasonality of production; sales of Class I milk per capita milk consumption; balance of receipts and disposition; prices and subsidy rates.
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Production of milk in the territory supplying Richmond and Richmond consumption. The increases from 1922 to 1926 in the different items investigated were population, number of milk producers, milk purchased by distributors, milk sold by distributors, surplus milk, and per capita consumption of whole milk.
- Waite, Warren C. DISTRIBUTION OF MILK IN THE TWIN CITIES. In H. B. Price, ed., THE MARKETING OF FARM PRODUCTS. STUDIES IN THE ORGANIZATION OF THE TWIN CITIES MARKET. pp. 320-345, 1927, Univ. of Minn. Press.
Until 1894, almost all milk came from producer-dealers. First company incorporated in 1894. Twin Cities Milk Producers Association supplies about 75 percent of milk; operation and payment methods of association. Size distribution of distributors in each city; costs of one distributor; public regulation.
- Walker, S. A. and M. V. Waananen. SUMMARY OF MILK MARKETING INFORMATION FOR EASTERN WASHINGTON AND NORTHERN IDAHO. Wash. Agr. Expt. Stas., Cir. 269, May 1955, 26 pp. Also, Supplement, SUMMARY OF MILK MARKETING INFORMATION FOR THREE DAIRY PLANTS IN OKANOGAN VALLEY.
Tabular data on milk production, utilization, and prices, Spokane market, 1950-55. Number of Spokane milk plants, 1950-55.
- Wallace, L. K. and P. L. Miller. STATEMENT CONCERNING THE CHICAGO MILK MARKET AND THE PROPOSED MARKETING AGREEMENT AND ORDER. U.S. Dept. Agr. Div. of Mktg. and Mktg. Agreements, Dairy Sect., 133 pp., July 1939.
Price structure and history, and supply and demand conditions. Most of the best data from H. Trelogan's Ph.D. thesis, Univ. Minn., 1938. An Economic Analysis of the Chicago Milk Market, which uses 1934-35 data under the license.
- Weld, I. C. THE DAIRY INDUSTRY IN NEW HAMPSHIRE. N.H. Agr. Expt. Sta. Bul. 120, pp. 71-80., Sept. 1905.
History; number and location of plants by type; transportation to Boston.
- West, George A. and Leland Spencer. THE SALES AND SUPPLY OF MILK AND CREAM IN ROCHESTER, 1933, Farm Econ. Cornell Univ., No. 86, pp. 2095-6, June 1934.
Volume sold by type of milk and cream; method of distribution; supply from farmers and country plants.
- West, George A. and Leland Spencer. THE SUPPLY AND SALES OF MILK AND CREAM IN ROCHESTER, N.Y., 1930-36. Cornell Univ. Farm Econ. 101: 2480-2484, May 1937.
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- Whitaker, George M. THE MILK SUPPLY OF BOSTON, NEW YORK, AND PHILADELPHIA. U.S. Dept. Agr. Bur. of Anim. Indus. Bul. 81, 62 pp., 1905.
For each market, methods and practices from farm to consumer.
- Whitaker, George M. THE MILK SUPPLY OF CHICAGO AND WASHINGTON. U.S. Dept. Agr. Bur. of Anim. Indus. Bul. 138, 40 pp., 1911.
Amount and source of supply; transportation and freight; methods of handling milk; dealers', producers, and labor organizations; wholesale and retail prices; official inspection.

ASSEMBLY, PROCUREMENT

- Alexander, W. H. WARTIME PRODUCTION AND TRANSPORTATION OF MILK IN THE SHREVEPORT AREA OF LOUISIANA. La. Agr. Expt. Sta. Bul. 378, 22 pp., May 1944.
Data for the year ended April 1943 were secured by interviews with 155 dairy farmers. Analysis are made of the location and size of the dairy business, number and types of routes, condition and utilization of trucks, organization of routes, factors relating to sustaining the production-feed situation, prices and subsidies, butterfat tests, and dairy farmer organization. Recommendations are made for improving the practices, routes, etc.

Bartlett, R. W. TRANSPORTATION OF MILK IN THE ST. LOUIS MILKSHED. Jour. Farm Econ. 18: pp. 352-362, May 1936.

Scope of information obtained; recent changes in methods of transporting milk; present methods of hauling milk; equipment used for hauling milk; types of roads in hauling routes; hauling costs to farmers and distributors; and opportunity for savings and greater economic stability in transportation system - reducing mileage and increasing volume per load, increasing hauling efficiency through more even production of milk, and possible savings in transportation costs by delivering more milk to country plants.

Bartlett, R. W. and W. F. Caskey. MILK TRANSPORTATION PROBLEMS IN THE ST. LOUIS MILKSHED, WITH SUGGESTED SOLUTIONS. Ill. Agr. Expt. Sta. Bul. 430, pp. 423-470, 1937. Production of milk, types and length of hauling routes, costs of transportation, costs of operating milk trucks, etc. Ways of reducing hauling costs and other costs are discussed and recommendations made as to methods of solving some of the transportation problems of the milkshed.

Eautwell, Wallace K. COST FUNCTIONS FOR MILK ASSEMBLY. N.C. State Col. M.S. thesis.

Bressler, R. G. and D. O. Hammerberg. EFFICIENCY OF MILK MARKETING IN CONNECTICUT. 3. ECONOMIES OF THE ASSEMBLY OF MILK. Storrs (Conn.) Agr. Expt. Sta. Bul. 239, 53 pp., 1942.

The effects of such factors as length of route and size of truck and load on cost of operating milk collecting routes were determined. The conclusion was reached that the existing system of milk collection is not only inefficient but is exacting excessive profits from milk producers. With efficient organization, the payments for the assembly of milk could be reduced about one-third. This would mean an increase in the annual incomes of the wholesale milk producers of Connecticut of approximately \$250,000.

Bressler, R. G., Jr. TRANSPORTATION AND COUNTRY ASSEMBLY OF MILK. Cornell Univ. Farm Econ. 22: 220-224, Feb. 1940.

Three phases of country assembly of milk are considered: Farm collection and transportation to country plants, country plant operation, and plant to market transportation. The object of the analysis is to determine the most economical combination of these three elements, or to discover the optimum size of plant, of plant production area, and of transportation.

Brown, A. A. and J. E. Donley. MILK CARTAGE IN THE SOUTHWICK-AGAWAM AREA OF THE SPRINGFIELD MILKSHED. Mass. Agr. Expt. Sta. Bul. 363, 26 pp., May 1939.

Analyzes milk cartage rates in the area for 1935 and suggests a reorganization of rate structure based on distance from market and farm location.

Collins, M. A. REDUCING MILEAGE IN MILK ASSEMBLY IN THE STATE OF VERMONT. Vt. Agr. Expt. Sta., 19 pp., Feb. 1943.

Survey of milk assembly, 1942; methods of reducing mileage.

Cotton, W. P. MILK HAULING RATES AND PROBLEMS IN NORTH CAROLINA. N.C. Agr. Expt. Sta. A.E. Inf. Ser. 28, 62 pp., Dec. 1950.

Characteristics of 364 milk collection routes were studied, including methods and frequency of assembly, ownership, type, age, and size of trucks, types of roads traveled, length of routes, number of patrons and volume per patron, hauling rates charged, and interplant transportation charges. Conditions were appraised in terms of time required per hundred-weight, extent of route duplications, and of unnecessary hauling. Rates and charges were appraised in relation to returns.

Cowden, J. M. FARM-TO-PLANT MILK HAULING PRACTICES OF DAIRY COOPERATIVES. U.S. Farm Credit Admin. Bul. 69, 63 pp., May 1952.

Milk routes, haulers, mileage traveled by trucks per day, miles of route per patron, charges to patrons, methods of determining hauling rates, volume of milk hauled per mile, and various practices used by cooperatives to increase efficiency and reduce costs.

Dow, George F. AN ECONOMIC STUDY OF THE COLLECTION OF MILK AND CREAM IN MAINE. Maine Agr. Expt. Sta., Bul. 373, pp. 109-145, Aug. 1934.

Important changes in the collection of milk and cream in Maine, 1928-32, and an analysis of the factors that affected the cost of collection during 1930-31. The data for 1928 were based on records of 6,580 dairymen who delivered milk or cream to the larger dairy dealers in Maine. The information for 1930-31 was secured from 1,802 dairymen.

- Dow, George F. COSTS AND RETURNS IN OPERATING MILK AND CREAM COLLECTION ROUTES IN MAINE. Maine Agr. Expt. Sta. Bul. 374, Sept. pp. 147-190, 1934.
Survey of 90 collectors in Maine, including 44 which hauled only milk, 26 which hauled only cream, and 20 which hauled both. The cost of operating motortrucks, the relation to truck cost of miles traveled and size of truck, costs and returns of collection, comparison between milk and cream routes, volume collected per trip, frequency of collection, utilization of time required, and distance covered per trip, and condition of roads are discussed.
- Dow, George F. COUNTRY ASSEMBLY OF MILK IN MAINE FOR SHIPMENT TO BOSTON DEALERS. Maine Agr. Expt. Sta. Misc. Pub. 570, Jan. 1943.
Summary of information from earlier studies and unpublished data for 1939. For use in making assembly and movement of milk more efficient.
- Grigsby, R. M. and R. A. Ballinger. HAULING MILK TO RECEIVING STATIONS IN THE NEW ORLEANS MILKSHED, MARCH 1942. La. Agr. Expt. Sta. Mimeo Cir. 28, 17 pp., July 1942.
Description of the existing assembly system and recommendations for reorganization of routes.
- Hammerberg, D. O. and W. G. Sullivan. AN ECONOMIC ANALYSIS OF THE CHARGES FOR TRANSPORTING MILK TO CONNECTICUT MARKETS, A PRELIMINARY REPORT ON THE PROJECT "SUPPLY AND TRANSPORTATION OF MILK IN CONNECTICUT." Storrs (Conn.) Agr. Expt. Sta. 26 pp., 1937.
Based upon records on 237 routes supplying milk dealers in the important milk-consuming areas in Connecticut. Results show that rates charged by distributors were higher than those of independent truckers and that route revision was needed. Establishment of prices for milk at farms rather than at markets would not solve the rate problem. Control of transportation and transportation rates by associations of milk producers was suggested as a solution to the problems involved.
- Hammerberg, D. O. and W. G. Sullivan. EFFICIENCY OF MILK MARKETING IN CONNECTICUT. 2. THE TRANSPORTATION OF MILK. Storrs (Conn.) Agr. Expt. Sta. Bul. 238, 29 pp., 1942.
The organization of milk transportation involved many inefficiencies, charges for transportation services did not reflect costs of performing the services, and monopolies existed. There was a preponderance of small trucks, excessive truck capacity, and extensive overlapping and duplication of routes. Dealers' control of transportation, as purchasers of the milk, apparently leads not only to excessive costs and inefficiencies but to monopolistic profits. In 1936, dealer-haulers charged an average of 9 percent more than independent haulers on routes similar in distance and volume.
- Hand, P. E. and C. W. Pierce. COST STUDIES OF RECEIVING AND TRANSPORTING MARKET IN THE PHILADELPHIA AREA. Pa. Agr. Expt. Sta. A.E. and R.S. 6, 21 pp., Aug. 1956.
Cost in 1954-55 of handling milk at selected country receiving stations to the Philadelphia market, the cost of receiving bulk milk from country receiving stations at city plants, and the cost of receiving milk shipped directly from farmers to city plants. Breakdown of plant operation costs.
- Holmes, J. C., H. C. Woodworth and W. Bredo. THE COLEBROOK PLAN: FOUR YEARS LATER. N.H. Agr. Expt. Sta. Agr. Econ. Res. Monog. 1, 12 pp., Mar. 1947.
The plan reorganized milk assembly in 1943 to conserve fuel and trucking equipment. This study reviews developments of milk assembly in the Colebrook milkshed, 1942-46, including the year after the wartime controls were eliminated.
- Johnson, S. and W. F. Henry. FORMULAS FOR ADJUSTING MILK TRANSPORTATION RATES. Storrs (Conn.) Agr. Expt. Sta. Bul. 274, 34 pp., Mar. 1951.
Provides a basis for adjusting hauling rates after an initial schedule, with appropriate differences among producers, is decided upon. Sections are devoted to the relative importance of various cost items in hauling milk, the effect of volume of milk deliveries on hauling costs, and hauling rates resulting from use of a suggested formula.
- Johnson, S. and G. K. Brinegar. ECONOMIC ANALYSIS OF THE MILK-HAULING-RATE STRUCTURE FOR MEMBERS OF A PRODUCERS' COOPERATIVE. Storrs (Conn.) Agr. Expt. Sta. Bul. 353, 20 pp., June 1960.
Hauling rate structure based on distance, volume, plus a stop charge for daily pick-up and a Grade A and Golden Guernsey differential.
- Kahlor, Karl Myron. TRANSPORTATION OF MILK IN THE CLEVELAND AREA. Ohio State Univ. M.S. thesis, 1938.

Kutish, I. John. REGULATIONS ON WEIGHT OF MOTORTRUCKS. PROBLEMS ILLUSTRATED BY WISCONSIN'S EXPERIENCE IN HAULING FLUID DAIRY PRODUCTS. U.S. Dept. Agr., Mktg. Res. Rpt. 28, Wis. Agr. Expt. Sta. coop., 49 pp., Nov. 1952.

Weight restrictions on trucks and changes.

LaFerney, Preston E. COSTS OF ASSEMBLING FLUID GRADE MILK IN THE CENTRAL ARKANSAS MARKET. Univ. Ark., M.S. thesis, 1960.

Larson, Adlowe L. MILK TRANSPORTATION IN THE STILLWATER AREA. Okla. Agr. Expt. Sta. Bul. B-265, 8 pp., Mar. 1943.

323 cans of milk per day from 190 patrons were handled on 11 truck routes, on which trucks traveled 391 miles. 25 individuals hauled 97 cans from 29 patrons per day and 216 miles. A suggested route plan is presented; it provided for adding isolated haulers to present truck routes and the forming of 1 new truck route. It would increase the daily mileage of truck routes 37 miles, and eliminate the 216 miles traveled by individual haulers. The reduction of 179 miles of travel per day would result in yearly savings of 65,335 miles of travel and about \$7,600 for truck costs and labor.

Luebke, B. H. et al. COLLECTION OF MILK FROM FARMS, KNOXVILLE MILKSHED AREA. Tenn. Agr. Expt. Sta. Monog. 162, 40 pp., Dec. 1943.

This study progress toward an efficient collection system to find chances for further economies. The conditions affecting milk collection in the milkshed, collection methods, contracts and rates, hauling charges in relation to service rendered, equipment used, efficiency of collection methods, overlapping of routes, and the opportunities for reducing hauling costs and for savings to self-haulers are discussed.

Luebke, B. H. and C. C. Mantle. CHANGES IN MILK COLLECTION SITUATION, KNOXVILLE MILKSHED, 1943 TO 1944. Tenn. Agr. Expt. Sta., Monog. 174, August 1944, 25 pp.

MacLeod, Alan. TRANSPORTATION OF NEW HAMPSHIRE MILK. II. REORGANIZATION OF TRUCK COSTS. N.H. Agr. Expt. Sta. Bul. 325, 23 pp., June 1940.

3 stages of reorganization of existing truck routes in south central New Hampshire and potential reductions in costs.

MacLeod, Alan. A DETAILED ANALYSIS OF POSSIBLE ECONOMIES IN THE ASSEMBLY AND DISTRIBUTION OF MILK IN NEW ENGLAND. New England Res. Council and U.S. Dept. Agr. Bur. Agr. Econ., coop., with New England Agr. Expt. Sta., 36 pp., May 1944.

Summary in next entry.

MacLeod, Alan. POSSIBLE ECONOMIES IN THE ASSEMBLY AND DISTRIBUTION OF MILK IN NEW ENGLAND. New England Res. Council on Mktg. and Food Supply, coop., with Agr. Expt. Stas. of Maine, Mass., N.H., R.I., Storrs (Conn.), and Vt. and the U.S. Dept. Agr. Bur. of Agr. Econ. 16 pp. May 1944.

Reorganization of milk collection; reduction in numbers of country plants; reorganization of shipment from country plant to city plant; direct haul assembly; reduction in numbers of small bottling plants; reorganization of milk delivery.

MacLeod, Alan, W. E. Carpenter, and J. A. Hitchcock. POSSIBLE SAVINGS IN THE ASSEMBLY OF MILK. A STUDY OF COUNTRY HAULING IN NORTHERN VERMONT. U.S. Dept. Agr., coop. with New England Res. Council and Vt. Agr. Expt. Sta., 32 pp., Nov. 1942.

This report is based on a 1941 study of 6 country plants assembling milk in Orleans County, Vt. The operations of the plants assembling milk, opportunities for conserving equipment, labor, and supplies, reorganization of the assembly system, and methods of reducing assembling costs are discussed.

MacLeod, A. and M. L. Geraghty. THE TRANSPORTATION OF NEW HAMPSHIRE MILK. I. ANALYSIS OF TRUCKING CHARGES. N.H. Agr. Expt. Sta. Bul. 307, 32 pp., June 1938.

The transportation of milk to Lancaster, N.H., surrounded by a typical Boston supply area; and to Nashua, N.H., consuming practically all milk hauled to it, is described. Using data from 86 independent and two distributor routes in the Connecticut Valley and 45 independent and 19 distributor routes in the Merrimack-Coastal area of New Hampshire, comparisons are made of routes, according to region and type of operations. Trucking charges under perfect competition are discussed. The data are analyzed to determine how far average charges on similar routes approach equality, the extent to which charges paid by producers vary with distance from market and amount of milk collected, the relationship of rates to road conditions, services rendered, etc., and the difference in rates charged by independent and by distributor truckers.

MacLeod, Alan, J. L. Tennant and W. J. Corr, Jr. TRUCKING MILK TO PROVIDENCE, RHODE ISLAND. U.S. Dept. Agr., coop., with New England Res. Council and R.I. Agr. Expt. Sta. 31 pp., March 1942.

Discusses the problems affecting milk hauling and charges in the Providence milkshed as of May 1941. Number of truck routes, size of trucks, mileage traveled per day, charges, estimated cost of operations, etc. A reorganized system of truck routes is outlined, and estimates are made of the number and size of trucks needed, mileage that would be traveled, costs, etc.

Matzen, E. H. A SURVEY OF COUNTRY MILK COLLECTION ROUTES IN THE FORT WAYNE AREA OF INDIANA. Purdue Univ. Agr. Expt. Sta., Bul. 520, 30 pp., 1947.

Study of 400 milk routes in Fort Wayne area for April 1943. Efficiency of routes measured in three ways (1) returns per hour of labor, (2) returns per truck mile, (3) the "efficiency index," a method of adjusting for variation in distance between producers and in volume of milk per producer.

McBride, C. G. THE OHIO FARMER AND HIS MILK MARKETS. Ohio Agr. Expt. Sta. Bul. 614, 50 pp., 1940.

Experiences of farmers in marketing whole milk, with emphasis upon the behavior and problems of the individual producer. Data were surveys of 3 townships, farm account records, and dealer statements. Topics include finding and holding a market, milk statements, marketing plans, and the producers' stake in transportation.

McBride, C. G. and R. W. Sherman. FARM SALES OF OHIO MILK THROUGH DIFFERENT OUTLETS. Ohio State Univ. Dept. of Rural Econ. Mimeo 131, Pt. 1, 30 pp., 1940.

Covers the Columbus area and includes Delaware, Fairfield, Franklin, Licking, Madison, Pickaway, and Union Counties. Based on a survey of all farms with three or more cows. Creameries and milk products manufacturing plants in the area are shown and changes in market outlets 1903-1940 are discussed. Data for counties and townships show number of dairy farms and milk cattle, and percentage of each by market outlet, 1939.

McBride, C. G. and T. K. Cowden. SOURCES OF MARKET MILK AND BUTTERFAT IN OHIO. Ohio Agr. Expt. Sta. Bul. 523, 38 pp., 1938.

Reports the findings (1) in a survey of the sources of milk and butterfat purchased by milk distributors and manufacturers of dairy products in the major markets of Ohio in 1931, and (2) of an analysis of Federal census data relative to milk and cream production in the State. Number of farms, by counties, under inspection by the boards of health of Cleveland, Cincinnati, Columbus, Akron, Dayton, Springfield, Toledo, Canton, Massillon, and Alliance, Ohio, and Pittsburgh, Pennsylvania; ratio of population served by milk dealers to the number of farms under board of health inspection in the eight areas. Maps and tables show the location of the uninspected farms selling milk to manufacturing plants in northern Ohio, the Swiss cheese area of the State, and distribution of farms on the basis of methods of assembling of sour cream or butterfat, location of cream stations, and predominating type of market outlet.

Mebus, W. C. PROBLEMS IN THE TRANSPORTATION OF MILK FROM FARMS TO MILK PLANTS. Miss. Agr. Expt. Sta. Bul. 382, 36 pp., 1943.

Ownership, size, condition, and use of trucks; condition of tires; variations in the length of routes; amount of milk hauled; size of loads; frequency of trips and charges on milk routes; and the quantities of milk rejected for sediment and excess acidity. Suggestions for reorganization of milk routes and for cooperation by farmers, milk plants, truckers, and the government in improving conditions.

Phillips, C. D. COLLECTION OF MILK AND CREAM FROM FARMS IN KENTUCKY. Kv. Agr. Expt. Sta. Bul. 479, 30 pp., Aug. 1945.

Survey of 769 routes, 1943; route mileage; number of patrons; size of load; opportunities for savings.

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Survey of 32 plants receiving direct-shipped milk in the under-45 mile zone, June 1958. Receipts by can and bulk; hauling rates and distance.

Pollard, A. J. TRANSPORTATION OF MILK AND CREAM TO BOSTON. Vt. Agr. Expt. Sta. Bul. 437, 42 pp., June 1938.

Discusses the relative importance of milk and cream; describes methods of transportation and their importance, and compares their rates and services; discusses the accuracy of the reports of receipts by the U.S. Bureau of Agricultural Economics.

- Pritchard, Norris T. and William H. Cope. MILK ASSEMBLY IN THE FORT WAYNE MILK-SHED. Purdue Univ. Agr. Expt. Sta. Bul. 559, 24 pp., Feb. 1951.
Milk assembly costs; factors affecting haulers' returns; developing hauling rates; changes in hauling practices to lower costs.
- Scanlan, John J. SURVEY OF THREE MARYLAND COOPERATIVE MILK TRUCKING ASSOCIATIONS. U.S. Farm Credit Admin. Misc. Rpt. 2, 22 pp., Jan. 1935.
Three cooperatives set up specifically to haul milk for members to distributors in Baltimore; operating practices; costs; earnings; hauling charges.
- Scanlan, John J. TRANSPORTATION OF MILK IN THE PHILADELPHIA MILKSHED. U.S. Farm Credit Admin. Bul. 13, 151 pp., 1937.
Facilities for milk transportation; growth and decline of receiving stations; local hauling, including effects on producers of receiving station closures, hauling agents, charges and income, cost of operating trucks, etc; hauling from receiving stations, including volume of shipments, methods of transportation, freight rates, costs, etc.; direct hauling, including area involved, charges, costs, etc.; reorganization of assembly; and cooperative hauling.
- Sherman, R. W. COUNTRY TRANSPORTATION OF MILK IN SELECTED AREAS OF OHIO, 1942. Ohio Agr. Expt. Sta. Dept. Rural Econ. Mimeo. Bul. 165, 26 pp., 1943.
Survey in summer and fall of 1942 of the transportation of milk from farms to dealers' platforms in Columbus, Cleveland, Canton, and Portsmouth, and Carroll County. Possible savings in number of trucks, mileage, etc., through rerouting, reducing plant stops, increased size of loads, etc.
- Spencer, Leland. AN ECONOMIC STUDY OF THE COLLECTION OF MILK AT COUNTRY PLANTS IN NEW YORK. Cornell Univ. Agr. Expt. Sta. Bul. 486, 47 pp., June 1929.
Hauling distances and the amounts of milk received by types of plants, methods of hauling, and types of vehicles used for different distances hauled; summaries of distances hauled, roads, loads, cost per trip and per hundredweight of milk, etc., for individual and commercial haulers.
- Trumbower, H. R. TRANSPORTATION OF MILK BY MOTOR TRUCK. U.S. Dept. Agr., Public Roads, 5 (5): 1-18, 1924.
A survey and investigation of transportation of milk by motortruck made in Baltimore, Philadelphia, Cincinnati, Detroit, Milwaukee, St. Paul, Minneapolis, and Indianapolis in 1923, intended to determine how often motortrucks are used in bringing milk into cities over the highways. The only motortrucks operated by farmer cooperatives were in the Baltimore area, where several organizations have succeeded.
- Whitted, Stephen F. and Floyd A. Lasley. MILK ASSEMBLY IN SOUTHWEST MISSOURI. Mo. Agr. Expt. Sta. Bul. 831, 27 pp., Jan. 1965.
Duplication of procurement areas; effects of hauling rate structures on assembly; effects of different types of hauling rates; seasonal variation effects assembly operations; economies of scale in assembling milk; reorganization of milk assembly systems.
- Wilcox, Emery C. TRANSPORTATION OF WISCONSIN MILK - FARM TO MARKET. Wis. State Dept. Agr. Bul. 308, 74 pp., July-Aug. 1951.
Wisconsin dairy farming; the public highway system; the hauling of Wisconsin's milk; hauling charges and costs; other dairy products moved by truck; based on surveys in 1950 and 1951.
- Woodworth, H. C. and J. C. Holmes. THE COLEBROOK PLAN FOR MILK TRANSPORTATION. N.H. Agr. Expt. Sta. Cir. 65, 19 pp., 1943.
The formation of the local transportation committee, procedures used by the committee, and the problems considered in the organization of the plan are described. The procedures for similar reorganizations are outlined. The proposed relocation of milk routes in the Colebrook milkshed recommended under the plan and approved by the U.S. Office of Defense Transportation is presented.

Bulk Tank Assembly

- Agnew, Donald B. HOW BULK ASSEMBLY CHANGES MILK MARKETING COSTS. U.S. Dept. Agr. Mktg. Res. Rpt. 190, 91 pp., July 1957.
Advantages and disadvantages of bulk assembly of milk; changes in customary tasks, changes in ownership and control of milk collection routes, and the accompanying changes in costs. Stresses the impact of bulk milk assembly on the structure of milk marketing and milk supply.

Baum, E. L. and D. E. Pauls. A COMPARATIVE ANALYSIS OF COSTS OF FARM COLLECTION OF MILK BY CAN AND TANK IN WESTERN WASHINGTON, 1952. Wash. Agr. Expt. Sta. Tech. Bul. 10, 37 pp., May 1953.

Costs were compared in terms of tank-truck operation, investment in cans or tanks, refrigeration, time and amount of labor used, density and length of routes, daily volume of milk per shipper, and distance between shippers.

Baumer, E. F. and Dale H. Carley. BULK MILK TANKS ON OHIO FARMS. Ohio Agr. Expt. Sta. Res. Bul. 776, 28 pp., July 1956.

Costs of bulk tanks; savings on hauling rates; planning bulk routes; hauler investment and costs; quality benefits and problems.

Beal, G. M. and C. R. Twining. BULK HANDLING OF MILK IN THE WASHINGTON, D.C., MILK-SHED. Md. Agr. Expt. Sta. Misc. Pub. 176, 36 pp., June 1953.

The experiences of producers, handlers, and tank-truck owners during the first year of the system. Information is given on hauling rates, laborers' attitudes, length and condition of farm lanes, type and capacity of truck used, and mileages.

Bowring, J. R. TANK-TRUCK ASSEMBLY OF MILK FOR NEW HAMPSHIRE. N.H. Agr. Expt. Sta. Bul. 410, 24 pp., March 1954.

Advantages and disadvantages are discussed. Concluded that the greatest economies will accrue to dealers. Competition between dealers for milk and handling appear to be a necessary incentive for the many small producers and truckers to buy the new equipment.

Bowring, J. R. and K. A. Taylor. TRANSITION TO THE BULK ASSEMBLY OF MILK IN NORTHERN NEW ENGLAND. N.H. Agr. Expt. Sta., Bul. 453, 60 pp., Oct. 1958. (Under contract with U.S. Dept. Agr., Agr. Mktg. Serv.)

Describes and discusses the transition of smaller dairy farms from can to tank assembly of milk. Reaction of producers, dealers, and truckers to the changeover both in prospect and in operation is provided to guide community farm leaders and extension personnel in the development of educational programs. Special emphasis is given to the potential savings in transportation and assembly costs.

Clarke, D. A., Jr. A COMPARATIVE ANALYSIS OF THE COSTS OF OPERATING MILK COLLECTION ROUTES BY CAN AND BY TANK IN CALIFORNIA. Univ. Calif. Giannini Foundation Agr. Econ. No. 91, 46 pp., 1947.

Discusses generally the costs involved, comparative costs, trends to be expected, etc., in the increasing use of farm storage tanks and transport tankers. Variations in cost, from differences in input, are presented.

Clarke, D. A., Jr. COST RELATIONSHIPS FOR MILK COLLECTION BY CAN AND BY TANK IN CALIFORNIA. Internat. Assoc. Milk Control Agencies, Annual Mktg. 16:134-139, 1952.

Summarizes the truck costs, container expense, and labor requirements for each method, indicates improved route operation, and shows how tank improvements could further reduce costs of milk distribution.

Cowden, J. M. FARM-TO-PLANT BULK AND CAN MILK HAULING COSTS. U.S. Dept. Agr. Farmer Co-op. Serv., Serv. Rpt. 18, 56 pp., Mar. 1956.

Costs of contract haulers for 2 midwestern cooperatives during the transition to bulk hauling.

Cowden, J. M. BULK MILK HANDLING IN 1955. U.S. Dept. Agr. Farmer Co-op. Serv., Gen. Rpt. 22, 38 pp., Apr. 1956.

The extent and nature of the adoption of bulk farm-to-plant transportation of milk by March 1955. Data show ownership of bulk trucks and can trucks (by dairy and contract haulers) by regions of the United States, trucks classified by type and capacity, rates for bulk and can hauling, size of plant, number of shippers, and route operating practices.

Cowden, J. M. COMPARING BULK AND CAN MILK HAULING COSTS. U.S. Dept. Agr. Farmer Co-op. Serv. Cir. 14, 13 pp., June 1956.

Reports cost comparisons between can and bulk milk hauling operations of 2 midwestern cooperatives. Estimates significance to producers of potential cuts in hauling costs.

Fallert, Richard F. and Stephen F. Whitted. IMPACT OF NEW MILK COLLECTION SYSTEM ON ST. LOUIS DAIRY FARMERS. Mo. Agr. Expt. Sta. Res. Bul. 719, 56 pp., Dec. 1959.

Effects of bulk tank collection on investments, costs, and operations of producers in St. Louis milkshed.

- French, Charles E., James R. Strain, and Curtis H. Braschler. MARKET PLANNING FOR FARM ASSEMBLY OF MILK. Purdue Univ. Agr. Expt. Sta. Res. Bul. 747, 20 pp., Aug. 1962. Purdue Univ. Agr. Expt. Sta. Res. Bul. 747, 20 pp., Aug. 1962. Case study of bulk milk handling in Evansville, Ind. Analysis of expected consequences to producers, haulers, and processors from adoption of bulk handling methods.
- Herrmann, Louis F. and D. B. Agnew. SHIPMENT OF MILK BY BULK TANK IN THE UNITED STATES. Proceedings of the XV Interna. Dairy Cong. pp. 2010-2015, 1959. Development of bulk collection; hygienic and economic aspects; trends.
- Hotis, R. P. TRANSPORTING AND HANDLING MILK IN TANKS. U.S. Dept. Agr. Tech. Bul. 243, 24 pp., 1931. Methods and advantages of handling milk delivered to the plant in tanks, the labor and time requirements of tank delivery. And the cost of handling milk in this way. Data on 300 tank trucks, 89 trailers, and 53 tank cars were collected in 1927-29, and observations were made on 82 tank trucks, 29 tank trailer and 28 tank cars.
- Ishee, Sidney and W. L. Barr. ECONOMICS OF BULK MILK HANDLING. Penn. Agr. Expt. Sta. Bul. 631, 33 pp., Mar. 1958. Costs to dairymen of changing to bulk milk handling and added returns.
- Ishee, S. and W. L. Barr. EFFECTS OF BULK MILK ASSEMBLY ON HAULING COSTS, FARM TO PLANT. Pa. Agr. Expt. Sta. Bul. 641, 21 pp., Dec. 1958. Data for daily can and tank pickup, and alternate-day tank pickup. For similar volumes of milk, alternate-day tank collection costs for truck operation and labor were less, but required the same equipment as daily tank collection. Costs were not greatly different on routes with small shipments per producer, with large numbers of shippers, or with considerable distance between shippers.
- Kelley, Paul L. COST FUNCTIONS FOR BULK MILK ASSEMBLY IN THE WICHITA MARKET. Kans. Agr. Expt. Sta. Tech. Bul. 96, 32 pp., May 1958. Cost coefficients were provided from survey and engineering data for a $2\frac{1}{2}$ ton truck carrying a 1,700 gallon stainless steel tank. In addition, route labor and unloading time functions were computed from a time and motion study. Operating costs included depreciation insurance, tires, gasoline, oil, lubrication, and transportation taxes.
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- McKinney, K. and R. Stelly. FARM-TO-PLANT HAULING AND RECEIVING BULK MILK. Tex. Agr. Expt. Sta. Misc. Pub. 377, 11 pp., Oct. 1959. Differences in assembling and receiving milk in bulk and cans in Texas. Differences in cost of equipment and investments, changes in routes and route control, relative densities of routes and hauling rates, variations in weight of milk between the farm and the plant and methods of measuring, and problems of converting to bulk assembly.
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- Roof, James B. MILK RECEIVING COSTS DURING SHIFT FROM CAN TO BULK. U.S. Dept. Agr. Farmer Co-op. Serv. Gen. Rpt. 77, 27 pp., 1960.
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- Waananen, M. V. and J. B. Wyckoff. SUGGESTED METHODS OF ESTABLISHING FARM BULK MILK HAULING RATES. Wash. Agr. Expt. Sta. Bul. 603, 21 pp., Apr. 1959.
Changes in costs in shifting from cans to bulk and methods of establishing cost-based rates.

Country Plants, Receiving Stations

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Costs in four model plants of different sizes.
- Bartlett, R. W. and W. E. Gregg. MILK MARKETING IN PENNSYLVANIA. SHIPPING STATION OPERATIONS. AN ECONOMIC ANALYSIS OF PLANT OPERATION BASED ON A STUDY OF THE RECORD OF 52 SHIPPING STATIONS IN 1925. Pa. Agr. Expt. Sta. Bul. 219, 43 pp., 1928.
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- Bressler, R. G., Jr. COUNTRY DAIRY PLANTS IN NORTHERN NEW ENGLAND. New England Res. Council on Mktg. and Food Supply, in coop. with Agr. Expt. Stas. of New England and U.S. Dept. Agr. 34 pp., 1942. Plant operations in 1937: location, size, type of operation. Trends since 1920: number and size of plants, utilization of milk, type of operations. Interplant shipments in 1937. Duplication of plant services.
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- Spencer, Leland. PROBLEMS IN THE LOCATION OF COUNTRY MILK PLANTS. Jour. Farm Econ. 11:313-329, 1929. In 1927, there were 1,330 milk plants in New York State; 550 shipping to New York City, 70 shipping to other cities, 75 condensereries and powder plants, 35 feeder plants, 350 cheese and butter factories, and 250 local retail plants. Study of 730 plants shipping fluid milk and cream (including some of the manufacturing plants). Plant costs, freight rates, hauling costs, eliminating nonessential plants, obstacles.
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elementary costs-land and buildings, equipment, management and labor, fuel, and miscellaneous costs; the different intermediate costs - steam generator, ice-making operation, water supply, and general cleaning; and the distribution of these costs to the various operations.

Cream Procurement

Bender, Lyle M. A STUDY OF PRODUCTION AND MARKETING OF BUTTERFAT AND BUTTER IN SOUTH DAKOTA. M.S. thesis, S. Dak. State Col., 1937.

Erwin, C. C. and D. N. Harrington. MARKETING CREAM IN MISSOURI THROUGH COOPERATIVE BUYING STATIONS. Mo. Agr. Expt. Sta. Res. Bul. 539, 35 pp., Dec. 1953.

Study of 50 cream buying stations in Missouri, 1951. Procurement of cream by cooperative buying stations; marketing practices affecting quality of cream; marketing margins and costs of handling cream.

Felberg, Ralph O. THE ECONOMIC FEASIBILITY OF WHOLE MILK PROCUREMENT BY CREAMERIES IN EASTERN SOUTH DAKOTA. M.S. thesis, S. Dak. State Col., 1957.

McBride, C. G. and R. W. Sherman. CREAM MARKETING IN SOUTHWESTERN OHIO. Ohio Agr. Expt. Sta. Bul. 546, 28 pp., 1935.

The production of commercial butterfat and farm butter in 1919-29 and the cream assembling systems are described. Location and market outlets of cream stations, number of patrons, supplementary lines of business and tenure of operators, and of the operation of cream-truck route including types of roads, mileage, farm pick-ups of cream, weight of loads, ton-miles of cream hauling, types of commercial status, age, floor space, present and probable mileage of trucks, other businesses of truckers, and gross receipts from and rates on routes.

Olson, James L. MARKETING CREAM IN PLASTIC BAGS. S. Dak. Agr. Expt. Sta. Agr. Econ. Pam. 75, 41 pp., Sept. 1956.

Case study of procurement of cream from farms in plastic bags, including quality and costs.

Quintus, P. E. and F. Robotka. BUTTERFAT PROCUREMENT BY CREAMERIES IN BUTLER COUNTY, IOWA. Iowa Agr. Expt. Sta. Res. Bul. 265, pp. 253-302, Dec. 1939.

Areas served by individual creameries have excessive overlapping, and many creameries have too small a volume of business to operate economically.

Quintus, Paul E. COOPERATIVE CREAMERY TRUCK ROUTES IN THE UNITED STATES. U.S. Farm Credit Admin. Misc. Rpt. 52, 28 pp., Apr. 1942.

Survey of 914 cooperative creameries, including 700 operating truck routes. Operating practices; hauling charges.

Riddell, F. T. and J. T. Horner. THE MARKETING OF MICHIGAN MILK THROUGH CREAMERIES, CREAM STATIONS, CONDENSERIES AND CHEESE FACTORIES. Mich. Agr. Expt. Sta. Spec. Bul. 189, 36 pp., Feb. 1929.

Assembly, by size of plant; costs; supplies; prices.

Thomsen, F. L. and W. H. E. Reid. FACTORS INVOLVED IN BUYING MISSOURI CREAM. Mo. Agr. Expt. Sta. Res. Bul. 137, 26 pp., 1930.

The production conditions, the present developments of market outlets, and the present system of marketing butterfat in Missouri are described. The advantages and disadvantages of different market outlets for butterfat are discussed. The conditions under which each market outlet is most likely to succeed and the conditions existing in Missouri are shown.

Wilson, Lowell W. CREAM MARKETING IN KENTUCKY. M.S. thesis, Univ. Kv. 136 pp., Sept. 1956.

Youngstrom, C. O. et al. EFFICIENCY OF CREAM STATIONS IN CREAM COLLECTION. Idaho Agr. Expt. Sta., Bul. 193, 35 pp., Sept. 1932.

This study is based chiefly on information obtained from 122 cream stations in 1930. Classifies stations by distance from creameries, number per town, frequency of shipments to creamery, weekly volume of butterfat received, number of patrons, and patrons' average weekly volume of butterfat. The system of paying operators, commission rates paid, and the returns to station operators are discussed. Cost of operating 37 stations in 1929, station shortage of butterfat, the butterfat test of cream delivered, and the frequency and size of deliveries are discussed.

PROCESSING PLANTS

Fluid Milk

- Babb, E. M., Jr. CHARACTERISTICS AND PRACTICES OF MARKET MILK PLANTS IN PENNSYLVANIA. Pa. Agr. Expt. Sta., Prog. Rpt. 185, 7 pp., Jan. 1958.
Survey of 60 plants in 1957: wage rates; costs; operating practices; receipts; utilization; products processed; containers; processing equipment.
- Babb, E. M., et al. INFORMATION FOR INDIANA FLUID MILK PLANTS--NEEDS, VALUE AND CURRENT STATUS. Purdue Univ. Agr. Expt. Sta. Res. Prog. Rpt. 154, 8 pp., Nov. 1964.
Information needed to manage a dairy business in terms of their relative potential contribution to profits; current status; information collected, resources devoted to information, methods of processing.
- Barry, Goodloe, Thomas D. Reinbold, and Mark R. Enger. EVALUATION OF NEW CONTAINERS FOR SCHOOL MILK. U.S. Dept. Agr. Mktg. Res. Rpt. 407, 46 pp., June 1960.
Case studies of tetra container and 5-gallon dispenser can. Packaging costs, prices, work methods, advantages and disadvantages of new containers, compared with 1/2 pint cartons.
- Baum, E. L., R. D. Riley, and E. E. Weeks. ECONOMIES OF SCALE IN THE OPERATION OF CAN AND TANK MILK RECEIVING ROOMS, WITH SPECIAL REFERENCE TO WESTERN WASHINGTON. Wash. Agr. Expt. Sta. Tech. Bul. 12, 70 pp., May 1954.
Fixed and variable operating costs, as well as effects of plant volume and scale are analyzed for technically balanced model and receiving rooms of various sizes, which receive Grade A milk in conventional 10-gallon cans and from farm tank pick-up trucks. Data for 1953 used for estimating costs.
- Blanchard, W. H., G. McBride, and A. L. Rippen. A COST ANALYSIS OF FLUID MILK PACKAGING OPERATIONS. Mich. Agr. Expt. Sta. Tech. Bul. 285, 44 pp., Mar. 1962.
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DISTRIBUTION

Fluid Milk

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Testimony at hearings on expansion of Louisville and Nashville orders. Grocery store sales of milk in 23 counties in south central Kentucky, by origin of milk.

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Spindler, H. G. RETAIL SALES OF MILK IN MULTIPLE-QUART UNITS IN THE SPRINGFIELD AREA. Mass. Agr. Expt. Sta. Bul. 495, 19 pp., June 1957.

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Compilation of available data from Federal order markets for November 1962. Includes at least some data from 66 markets.

West, George A. and Leland Spencer. SALES OF MILK AND CREAM IN ROCHESTER, NEW YORK. Cornell Univ. Jour. Farm Econ. Agr. Expt. Sta. Bul. 81, p. 1960, June 1933.

In November 1932, there were 126 milk dealers holding permits in Rochester, N.Y., and 123 in November 1931. Distribution of milk: Retail 73.2 percent; stores 16.2 percent; restaurants, 10.6 percent (4.0 percent in bottles; 6.6 percent bulk). Cream: 29.3 percent retail, 13.4 percent stores, 57.3 percent restaurants.

Vial, E. E. CHANGES IN SALES OF MILK AT INDEPENDENT GROCERY STORES. Milk Dealers' Assoc. of Metrop. New York, Membership Ltr. 84, 7 pp., Sept. 7, 1954.

Data from 100 independent grocery stores in various sections of New York City from N.Y. Dept. of Agriculture and Markets. Glass vs. paper; homogenized vs. pasteurized; advertised vs. unadvertised.

Vial, E. E. CHANGES IN SALES OF CREAM AT INDEPENDENT GROCERY STORES. Milk Dealers' Assoc. of Metrop. New York, Membership Ltr. 86, 6 pp., Nov. 5, 1954.

Sales of cream in 100 independent stores in New York City, 1948-54.

Delivery Routes

Adams, T. M. WARTIME CHANGES IN MILK DISTRIBUTION AND IN THE CONSUMPTION OF MILK, CREAM, BUTTER AND OLEOMARGARINE IN VERMONT. Vt. Agr. Expt. Sta. Bul. 527, 30 pp., Oct. 1945.

Information from interviews during June 1944 with 1,150 housewives in Burlington and two nearby villages. The attitudes of dealers toward continuation of every-other-day delivery of milk after the war were learned during the summer of 1944 from 112 usable replies to a mail questionnaire sent to 400 milk dealers of the State. The bulletin discusses housewives' attitudes toward alternate-day deliveries; percentage of milk purchased in stores; changes in milk distribution; and consumption of milk, cream, butter, and margarine.

Alexander, W. H. and R. A. Ballinger. THE DISTRIBUTION OF FLUID MILK IN NEW ORLEANS, LOUISIANA. La. Agr. Expt. Sta. Mimeo. Cir. 32, 25 pp., Apr. 1943.

The volume of milk delivered, condition of trucks and tiers, delivery vehicles, time required for delivery, length and reorganization of delivery routes, and the duplication of stops are discussed.

Anderson, Reice and Leland Spencer. WAYS OF CONSERVING TIRES AND REDUCING OTHER EXPENSES IN THE DISTRIBUTION OF MILK. Cornell Univ. Agr. Expt. Sta. A.E. 386, 12 pp., Jan. 1942.

Possible ways of changing milk distribution: alternate-day delivery, discounting, exchanging customers, curtailing callbacks and special deliveries, shifting to daylight delivery.

Babb, E. M. and W. T. Butz. IMPROVING FLUID MILK DISTRIBUTION PRACTICES THROUGH ECONOMIC-ENGINEERING TECHNIQUES. Pa. Agr. Expt. Sta. Bul. 622, 40 pp., June 1957.

Study of developing and testing methods of reducing retail distribution costs that can be applied in small dairies with minimum expenditure of resources. Techniques show how a small dealer could evaluate his delivery system and determine what phases of distribution could be improved.

Blanford, C. J. COMPETITION AMONG DEALERS IN THE DELIVERY OF MILK IN NEW YORK CITY. Cornell Univ. Jour. Farm Econ. 99: 2427-2428, Feb. 1937.

Measures amount of duplication in milk delivery to: Families in apartment houses, stores, and other wholesale customers.

Bowring, J. R. and John C. Holmes. COMPARING MARKET EFFICIENCY IN THE DELIVERY OF MILK. N.H. Agr. Expt. Sta. Agr. Econ. Res. Mimeo. 10, 7 pp., Sept. 1952.

Measuring aggregate efficiency in 4 markets in New Hampshire by units of milk delivered per man-hour and per truck-mile.

Bowring, J. R. and Joseph Gartner. COMPARING MARKET EFFICIENCY IN THE DISTRIBUTION OF MILK. N.H. Agr. Expt. Sta. Agr. Econ. Res. Mimeo. 13, 5 pp., Feb. 1955.

Units of milk delivered per man-hour and per truck-mile in 4 New Hampshire markets, 1941, 1945, 1951, 1954.

Bressler, R. G., Jr. et al. EFFICIENCY OF MILK MARKETING IN CONNECTICUT: 5. ECONOMIC AND BIOLOGY OF ALTERNATE-DAY MILK DELIVERY. Storrs (Conn.) Agr. Expt. Sta. Bul. 247, 60 pp., 1943.

Information regarding their retail operations before and after adopting the alternate-day plan was obtained from 100 distributors representative of different sizes and types of dealers. The study of biological aspects is based on samples from 24 sources--dealers in different cities and towns, the University creamery, and reports of health officers. The changes in number of routes; volume of milk; distance traveled by trucks; average time per route; tire, gasoline, and oil consumption; and in truck labor, and miscellaneous costs are discussed. Alternate-day deliveries are satisfactory where home refrigeration is adequate.

Bressler, R. G., Jr. and Alan MacLeod. CONNECTICUT STUDIES MILK DELIVERY. Jour. Mktg., pp. 211-219, Oct. 1947.

Inefficiency in existing delivery system; reduction in routes, mileage, and costs; acceptability of alternate-day delivery to consumers.

Bressler, R. G., Jr., D. A. Clarke, Jr., and S. K. Seaver. EFFICIENCY OF MILK MARKETING IN CONNECTICUT. 9. CONSERVATION POSSIBILITIES IN RETAIL DELIVERY IN MAJOR MARKETS. Storrs (Conn.) Agr. Expt. Sta. Bul. 253, 40 pp., 1944.

For the Hartford market, describes the dealers, delivery densities, and the present delivery system, and discusses the reorganization possibilities--exclusive delivery territories, reorganized mileage requirements, and deliveries from one central plant. For the New Haven market, general characteristics, geographic distribution of dealers and of consumption, and the present delivery system are described and discussed; and the reorganization studies on allocating territories for all dealers and for limited groups of dealers, and deliveries from central plants are discussed. Other sections of the report deal with the estimated costs of delivery of milk for the two cities, and milk delivery in all Connecticut markets.

Conner, M. C. and E. J. Giles. MILK DELIVERY PRACTICES--ALTERNATIVES AND COSTS. Va. Agr. Expt. Sta. Bul. 515, 59 pp., July 1950.

Evaluates in terms of work content and costs, several alternative arrangements for distributing milk products from the milk plant to retail and wholesale customers. Gives specific information on route characteristics, including number of customers, miles per route, units per stop, daily load, time in hours, and labor and truck costs. Based on 1948 studies in Danville and Lynchburg.

Cook, H. L., H. W. Halvorsen, and R. W. Robinson. COSTS AND EFFICIENCY OF WHOLESALE MILK DISTRIBUTION IN MILWAUKEE. Wis. Agr. Expt. Sta. Res. Bul. 196, 40 pp., Jan. 1956.

The study was made to measure the cost variation with volume per stop and variation due to kinds of service and types of container. The expenses of wholesale delivery result from labor requirements and truck expense.

Dow, G. F. REDUCING COST OF DISTRIBUTING MILK IN MAINE. Jour. Farm Econ. 21: 309-314, Feb. 1939.

Recommends that special attention be given to the following factors: larger volume per distributor; greater volume of sales per mile traveled on milk routes; stricter credit policy to reduce bad debts and collection costs; reduction of bottle losses; consideration of the use of horses instead of motortrucks on milk routes up to 15 miles in length; employment in general of only one man to a route; and curtailment of special services such as special deliveries.

Dow, G. F. SIZE OF LOADS AND DELIVERY COSTS FOR LABOR IN MILK DISTRIBUTION IN BOSTON AND PORTLAND. Maine Agr. Expt. Sta. Bul. 437, pp. 459-490, 1945.

This study of the effect of wartime practices upon the size of loads and the trend in delivery costs is based upon surveys in Portland of each of the 4 largest distributors, and in Boston of each of the 8 largest distributors, representing more than two-thirds of the total sales in that market. The wartime practices and trends in number of delivery routes and volume of dairy products sold from 1941 to 1944 are discussed. The size of loads, labor utilization, and delivery costs for labor on the retail and wholesale routes in the 2 cities in October 1944 are analyzed. The increase in delivery costs (if return is made to prewar loads and other practices), consumer acceptance of alternate-day deliveries, and other wartime practices are discussed.

Dow, G. F. A PRELIMINARY REPORT ON CONSUMERS' PROBLEMS OF EVERY-OTHER-DAY DELIVERY OF MILK IN PORTLAND AND WESTBROOK, MAINE. Maine Agr. Expt. Sta. Misc. Pub. 571, Jan. 1943.

Consumer survey in summer 1942. See also Misc. Pub. 574.

Ellenberger, H. B. BOTTLED MILK DELIVERIES. Univ. Vt. Agr. Expt. Sta. Bul. 486, 12 pp., Apr. 1942.

In a survey of milk distribution in Burlington, records were obtained for 43 of the 44 milk routes, covering the time consumed in each operation from the loading of the delivery truck, through all deliveries, and including the return trip and unloading of empty bottles and returns; the location of each stop; the amounts delivered and the time required; the routing of the trucks; and the time of each en route. The refrigeration facilities in 161 and 101 homes in two sections of the city are also reported.

Garcia Ortega, Rafael, and George Edward Pringle. COSTS AND EFFICIENCY OF RETAIL MILK ROUTES IN THE SAN JUAN METROPOLITAN AREA, PURETO RICO. P.R. Agr. Expt. Sta. Bul. 174, 53 pp., Dec. 1963.

Study of 13 milk routes of 2 plants. Time factors involved in retail milk distribution; costs per customer and per quart; costs and volume.

Hicks, J. W. and G. B. Wood. OPERATIONS IN RETAIL AND WHOLESALE MILK ROUTES. Purdue Univ. Agr. Expt. Sta. Bul. 556, 41 pp., Nov. 1950.

Factors, particularly labor, influencing the cost of milk delivery in Indiana markets, 1948-49.

Hitchcock, J. A. REDUCING TRUCK MILEAGE IN RETAIL MILK DELIVERY. Vt. Agr. Expt. Sta. Bul. 491, 12 pp., June 1942.

Cost reductions through every-other-day delivery.

Hoecker, R. W. DISTRIBUTION OF MILK IN MANHATTAN, KANSAS, AND METHODS OF CONSERVING TIRES. Kans. Agr. Expt. Sta. Agr. Econ. Rpt. 16, 14 pp., 1942.

This report is based on data collected during the spring of 1942 from 17 of 20 milk distributors in the city and representing about 91 percent of the milk sold during the period. The retail and wholesale and possible alternative methods of distribution are also discussed.

Holmes, J. C., H. C. Woodworth, and W. Bredo. THE EFFICIENCY OF WARTIME PRACTICES IN DELIVERY OF MILK. EVERY-OTHER-DAY DELIVERY OF MILK. N.H. Agr. Expt. Sta. Agr. Econ. Res. Mono. 2, March 1947.

Johnson, S. and G. K. Brinegar. EFFICIENCY FACTORS AND CHANGES IN MILK DISTRIBUTION, 1946-1954. Storrs (Conn.) Agr. Expt. Sta. Bul. 312, 30 pp., Sept. 1954.

Changes in practices, sales, load size, 1946 to 1954, of 19 Connecticut handlers.

Johnson, Stewart. MILK DISTRIBUTION IN SIX LARGE CITIES OF UPSTATE NEW YORK.

Cornell Univ. Agr. Expt. Sta. A.E. 517, 35 pp., Mar. 1945.

Loads on wholesale and retail routes, October 1944; changes in sales on routes; labor cost in delivering milk on retail routes, 1941-44.

Johnson, Stewart. LOAD SIZE AND DELIVERY LABOR COST IN MILK DISTRIBUTION. Storrs (Conn.) Agr. Expt. Sta. Bul. 264, 19 pp., Mar. 1950.

Loads on retail routes of 23 Connecticut distributors, May 1946; earnings of retail routemen; loads and earnings on wholesale routes; changes in distribution between 1941 and 1946.

King, G. A. and R. G. Bressler. EFFICIENCY OF MILK MARKETING IN CONNECTICUT. 12. WHOLESALE MILK DISTRIBUTION. Storrs (Conn.) Agr. Expt. Sta. Bul. 273, 56 pp., July 1950.

Time studies of particular route operations were analyzed. Equations express route time requirements as a function of such factors as miles traveled, route volume, and number of customers served. Studies of truck costs resulted in cost equations for trucks of the sizes and types commonly used in wholesale milk delivery.

Luebke, B. H., C. C. Mantle, and W. S. Rowan. MILK DELIVERY IN KNOXVILLE, TENNESSEE. Tenn. Agr. Expt. Sta. Mono. 167, 33 pp., March 1944.

Based largely on interviews in a sample area of Knoxville on the method of milk and cream delivery, efficiency of delivery and consumer preferences for various delivery methods.

MacLeod, Alan and C. J. Miller. EFFICIENCY OF MILK MARKETING IN CONNECTICUT: 7. MILK DELIVERY IN RURAL CONNECTICUT. Storrs (Conn.) Agr. Expt. Sta. Bul. 249, 37 pp., 1943.

Based on a study of 12 areas grouped on the basis of daily commercial deliveries of less than 200 quarts, 200-499 quarts, and 500-2,500 quarts. The potential savings in rural areas, the problems of exclusive territory system of distribution, and the possible savings if milk were delivered from one central plant are discussed.

Metzger, H. B. THE TREND IN MILK DELIVERY EFFICIENCY AND LABOR COSTS IN PORTLAND, MAINE, 1941, 1951, 1954. Maine Agr. Expt. Sta. Rpt. 50, 26 pp., Dec. 1954.

Assesses the extent to which World War II efficiencies of milk delivery had been carried into the postwar period and measures their effect on costs. Data are for the years 1941, 1951, and 1954, and were obtained from the records of the 4 largest distributors in the Portland market.

Metzger, H. B. DELIVERY PRACTICES ON HOME DELIVERY MILK ROUTES IN THE NORTH-EAST AND DISTRIBUTOR ATTITUDES TOWARD REDUCTION IN DELIVERY FREQUENCY. Maine Agr. Expt. Sta. Misc. Rpt. 111, 19 pp., Feb. 1964.

Survey of 264 processors in the Northeast, fall 1963. Present frequency of delivery and attitudes toward less-frequent delivery (twice a week).

Metzger, H. B. TWICE-WEEKLY DELIVERY ON RETAIL MILK ROUTES: POSSIBLE ECONOMIES: CONSUMER AND DEALER ATTITUDES TOWARD ADOPTION. Maine Agr. Expt. Sta. Bul. 612, 28 pp., Mar. 1963.

Survey of 44 milk distributors operating 342 routes, 1961, and of 529 households in Portland, Maine. Characteristics of retail milk routes; possible economies from twice-weekly delivery; distributor and consumer attitudes towards twice-weekly delivery.

Pierce, C. W. SURVEY OF MILK ROUTES IN NEW YORK CITY. Cornell Univ., Farm Econ. 88: 2129-33, Feb. 1935.

Study of 69 routes, 1933-34. Type of vehicle, practices, time in various operations, customers served, loads, sales.

Pollard, A. J. DUPLICATION IN DELIVERY OF MILK TO STORES IN NEW YORK CITY. Cornell Univ., Jour. Farm Econ. 116: 2863-2865, Jan. 1940.

In a survey of retail food stores in New York City, June 1938, data indicated an average number of delivery stops per store of 2.3. The independent stores tended to buy from more dealers than did the stores of other kinds, especially in low-income sections of the city. Duplication in delivery to independent stores was greater in the Bronx than in the other boroughs.

Rinear, E. H. and H. C. Moore. RETAILING MILK IN LACONIA. N.H. Agr. Expt. Sta. Bul. 272, 20 pp., 1933.

A study was made in 1932 to determine whether more efficient methods of distribution with resulting larger returns to producers could be used in Laconia, a city of 12,400 people.

Seaver, S. K. and R. G. Bressler, Jr. EFFICIENCY OF MILK MARKETING IN CONNECTICUT: 8. POSSIBLE MILK DELIVERY ECONOMIES IN SECONDARY MARKETS. Storrs (Conn.) Agr. Expt. Sta. Bul. 252, 68 pp., 1944.

General characteristics of the markets, duplication of delivery routes, present organization of routes, and potential effects of exclusive territories on costs of delivery and possible savings for Torrington and Willimantic, and less detailed analysis in New Haven suburban markets.

Simmons, Richard L. WHOLESALE MILK DISTRIBUTION PRACTICES, COSTS AND PRICING IN NORTH CAROLINA. N.C. Agr. Expt. Sta. A.E. Info. Ser. 88, 38 pp., Feb. 1962.

Intensive cost study of 19 wholesale routes of 5 distributors in 5 North Carolina markets; cost savings through less-frequent delivery; volume discounts.

Spencer, Leland. WARTIME ECONOMIES IN MILK DELIVERY. Cornell Univ. Agr. Expt. Sta. Bul. A.E. 528-A, 9 pp., Sept. 1945.

Reduction in selling and delivery costs; economy measures and their effects.

Spencer, Leland and H. Alan Luke. A STUDY OF MILK DELIVERY IN THE NEW YORK MARKET WITH PARTICULAR ATTENTION TO WARTIME ADJUSTMENTS. Cornell Univ., Agr. Expt. Sta., Bul. A.E. 534, 82 pp., Dec. 1945.

Bulletin A.E. 534-A, October 1945, is a summary. Survey of firms operating routes, October 1944. Size distribution of dealers; factors affecting efficiency on wholesale and retail routes; effects of wartime regulations on efficiency (changes 1942 to 1944); attitudes of dealers on wartime restrictions.

Spencer, Leland and Max Brunk. A STUDY OF MILK DISTRIBUTION PRACTICES AS RELATED TO THE COMPETITIVE POSITION OF HOME DELIVERY. American Dairy Assoc., 3 pp., Sept. 1959.

Price is major reason for shifting to store purchase. Quantity discounts should be used. Weekly bills might help.

Spindler, Herbert G. LABOR COSTS ON WHOLESALE MILK ROUTES IN SPRINGFIELD, MASSACHUSETTS. Mass. Agr. Expt. Sta. Bul. 498, 44 pp., Jan. 1958.

Study of 13 wholesale routes of 7 companies. Characteristics of routes; sales and costs; effect of various factors on costs.

Tedford, J. R. and A. L. Domike. EFFICIENCY OF MILK DISTRIBUTION IN RHODE ISLAND. R.I. Agr. Expt. Sta. Bul. 333, June 1956.

Labor and equipment use; impact on efficiency of eliminating Sunday deliveries.

Utter, K. L., W. S. Rosenberger, H. Homme, and Geoffrey Shepherd. METHODS AND COSTS OF PROCESSING AND DELIVERING FRESH CONCENTRATED MILK IN RURAL AREAS. Iowa Agr. Expt. Sta. Spec. Rpt. 14, 16 pp., Nov. 1955.

Experimental rural delivery routes in Iowa and Illinois; methods of processing; customers and their reactions; costs of processing and rural delivery.

Williams, J. R. THE ECONOMIC PROBLEMS OF MILK DISTRIBUTION IN THEIR RELATION TO THE PUBLIC HEALTH. Fifteenth Internatl. Cong. on Hyg. and Demog. Trans. 5: 128-140, 1912.

A Rochester milk study; efficiency of route operations (overlapping).

Stores

Alberts, N. L. LOCATION VS. BRAND PREFERENCE IN SUPERMARKET MILK PURCHASES. Purdue Univ., M.S. thesis, Jan. 1955.

Barron, J. C. and W. T. Butz. DISTRIBUTION OF FLUID MILK THROUGH RESALE OUTLETS. PRACTICES AND COSTS. Pa. Agr. Expt. Sta. Bul. 723, 32 pp., Aug. 1965.

Characteristics of resale outlets (mostly grocery stores) for fluid milk; resale prices; delivery plans and costs.

Bartlett, R. W. DISTRIBUTION OF MILK THROUGH STORES AND DEPOTS. Ill. Farm Econ. 24/25: 116-119, May-June 1937.

Costs of distribution in Boston, Mass., and Danville, Ill.

Bishop, G. R. MILK SALES BY STORES IN BUFFALO. Jour. Farm Econ. 113: 2891-2793, May 1939.

On March 1, 1937, there were 2,816 independent stores and 391 chain stores that sold milk in Buffalo, New York, market. About the same number of stores sold milk as those that sold food at retail. Independent stores most commonly sold food at retail. Independent stores usually sold from 13 to 24 quarts of milk; sales in this range were made by 1,019 of the 2,816 stores. Chain stores sold from 25 to 36 quarts; sales in this range were made by 182 of the 391 chain stores. The total daily sales of milk by independent stores were 52,360 quarts and by chain stores, 10,259 quarts. An average of 1.7 stops per independent store is recorded, and 1.1 stops per chain store.

Blanford, C. J. DAY-OF-THE-WEEK VARIATIONS IN THE STORES SALES OF MILK AND CREAM IN THE NEW YORK MARKET. Cornell Univ. Jour. Farm Econ. 112: 2755-2756, Apr. 1939.

Because many retail food stores were closed all or part of the day on Sunday in 1937, milk and cream sales on Sunday were low and on Saturday and Monday were high. The degree of variation differed with the product, the type of store, and the type of trade served.

Blanford, C. J. SALES OF CREAM BY RETAIL STORES IN THE NEW YORK MARKET, JUNE 1938. Cornell Univ. Agr. Expt. Sta. A.E. 244, 14 pp., 1939.

About two-thirds of all cream distributed in New York City is sold for home consumption, and one-third to soda fountains and restaurants. Of the quantity sold for home consumption, about seven-eighths is sold through stores. Retail prices of cream varied considerably and were lowest at stores serving low income families. The effect of price differentials upon relative sales of evaporated milk is also discussed.

Blanford, C. J. SALES OF MILK BY RETAIL STORES IN THE NEW YORK MARKET, JUNE 1938. Cornell Univ. Agr. Expt. Sta. A.E. 237, 18 pp., Dec. 1938.

Based on data obtained from 4,508 retail food stores, June 6-18, 1938. Includes proportion of stores selling each grade of milk in relation to family income; quantities of milk sold per store by grade; factors affecting quantities sold; and prices of milk, with reference to variation in prices, relation of prices to quantities sold, and effect of price differentials upon relative sales of fluid milk in glass bottles and paper containers and of evaporated milk.

Dow, George F. MILK DISTRIBUTION THROUGH STORES IN THE PORTLAND MARKET. Maine Agr. Expt. Sta. Misc. Pub. 574, July 1943.

Consumer study (1937) to determine reasons for buying at stores.

Field, Barry C. QUANTITY OF MILK PURCHASES PER CUSTOMER, SACRAMENTO MARKETING AREA. RETAIL STORE AND CONSUMER SALES AT MILK PLANTS. Calif. Bur. of Milk Stabilization, 15 pp., May 1960.

Survey of 80 grocery stores and 13 drive-ins, 1960; size of purchase at each.

Field, Barry C. CUSTOMER PURCHASES OF FLUID MILK IN GROCERY STORES AND DAIRY DRIVE-INS WITH SPECIAL REFERENCE TO THE ALAMEDA-CONTRA COSTA MARKETING AREA. Calif. Agr. Expt. Sta. 36 pp., Mar. 1961.

Development of dairy drive-ins in California; sales by drive-ins by marketing area, 1957-59; price differentials; survey of 82 grocery stores, November 1960, and of 11 drive-ins for customer purchases by size of purchase; survey of 821 customers of drive-ins for buying practices.

Flynn, Gordon. IMPROVED HANDLING OF DAIRY PRODUCTS IN RETAIL FOOD STORES. U.S. Dept. Agr. Mktg. Res. Rpt. 661, 24 pp., Aug. 1964.

More efficient work methods for ordering, receiving, price-marking, and stocking milk, butter, margarine, and eggs.

Friedly, Donald Eugene. AN ANALYSIS OF THE PRACTICES AND PROCEDURES OF THE RETAIL DAIRY DEPARTMENTS IN CLEVELAND, COLUMBUS, AND DAYTON, OHIO. Ohio State Univ. M.S. thesis, 1959.

Kirkwood, E. K. and J. H. Blackstone. MERCHANDISING DAIRY PRODUCTS IN ALABAMA RETAIL FOOD STORES. Ala. Agr. Expt. Sta. Bul. 294, 62 pp., May 1955.

Methods of handling and selling dairy products; cost and efficiency of these factors.

Korzan, G. E. and J. A. Pfanner, Jr. COSTS OF RETAILING MILK AMONG A GROUP OF GROCERY STORES IN PORTLAND, OREGON. Oreg. Agr. Expt. Sta. Bul. 504, 16 pp., Oct. 1951.

Shows unit costs for handling milk in small, medium, and large grocery stores, and by type of outlet, in June 1950, in 35 stores.

Meade, D. and R. K. Mead. SALE OF DAIRY PRODUCTS AT ROADSIDE MARKETS IN MARYLAND. Md. Agr. Expt. Sta. Bul. 394, pp. 595-626, Mar. 1936.

A survey of 13 dairy roadside markets made during the summer of 1934. Factors such as weather, time of day, direction of traffic, qualities of products that appeal, and prices are considered in relation to sales.

Mize, Jessie J., Richie C. Thornton, and Doris W. Thompson. INVENTORY OF DAIRY PRODUCTS IN RETAIL MARKETING AGENCIES, WALTON COUNTY AND ALBANY, GEORGIA.

Ga. Agr. Expt. Stas. Bul. N.S. 38, 31 pp., Jan. 1957.

Survey of 86 retail outlets in Walton county and 32 in Albany, 1954-56. Percentage of stores handling various products; most frequent prices; size of container; storage space; display space; services.

Norton, L. J., and Leland Spencer. A PRELIMINARY SURVEY OF MILK MARKETING IN NEW YORK. Cornell Univ. Agr. Expt. Sta. Bul. 445, 51 pp., Nov. 1925.

Sheffield Farms Co., Inc., operated a chain of grocery stores which sold both bottled and bulk milk. Bulk sold at 4-5 cents per quart less.

Spindler, H. G. EFFECTS OF SALES OF MILK IN MULTIPLE QUART CONTAINERS. Mass.

Agr. Expt. Sta. Bul. 507, 22 pp., Jan. 1959.

Milk sales volume and price data for 15 stores in Springfield, Nov. 1956 and Oct. 1955.

Glass gallon and half-gallon containers had been introduced in Aug. 1954. Prices and margins; consumption.

Restaurants, Institutions

Clement, Wendell E. USE AND PROMOTION OF DAIRY PRODUCTS IN PUBLIC EATING PLACES. U.S. Dept. Agr. Mktg. Res. Rpt. 626, 25 pp., Aug. 1963.

Survey of public eating places in Hartford, Conn., and Indianapolis, Ind., in November 1961. Merchandising and use of fluid milk and other beverages, including margins, prices, and practices; merchandising and use of other dairy products; promotional practices and materials.

Colburn, Jerry and S. Kent Christensen. COMPARATIVE COSTS OF SERVING COFFEE AND MILK IN SELECTED OREGON RESTAURANTS. Oreg. Agr. Expt. Sta. Misc. Paper 59, 30 pp., July 1958.

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England, George M. WHAT DETERMINES THE CHARGES FOR MILK SERVED IN RESTAURANTS. Vt. Ext. Brieflet 890 (PR1252), 10 pp., 1954.

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MacPherson, D. D. and Jesus L. Maldonado. COSTS, NET MARGINS, AND SELLING PRICES OF BEVERAGES SOLD IN AN EMPLOYEE FOOD SERVICE. U.S. Dept. Agr. Mktg. Res. Rpt. 464, 27 pp., Apr. 1961.

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Vending Machines, Home Dispensers

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Practices, organization, costs, returns.

Banks, Quentin D. and Stephen F. Whitted. PROBLEMS IN MILK VENDING. Mo. Agr. Expt. Sta., Bul. 693, 11 pp., Oct. 1957.

Where vending fits in; vending problems.

Brown, E. Evan. SELLING MILK BY AUTOMATIC VENDING MACHINES. S.C. Agr. Expt. Sta. Bul. 435, 46 pp., June 1956.

Experiments with vending machines in various locations; costs and returns.

Brown, E. Evan and B. J. Todd. AUTOMATIC MILK VENDING. S.C. Agr. Expt. Sta. A.E. 115, 13 pp., Nov. 1955.

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Clarke, James H., Mardy Myers, and J. Scott Hunter. A MARKETWIDE EVALUATION IN BERKELEY COUNTY, W. VA. W. Va. Agr. Expt. Sta., Agr. Mktg. Serv. coop., Bul. 429, 58 pp., June 1959.

Sales of fluid milk through coin-operated vending machines averaged 1.5 percent of total milk sales in the market area from October 1955 to June 1957. More than 70 percent of milk vended was sold in plants and offices. Before installation of vending machines in these plants and offices, 19 percent of the employees used milk; after installation 63 percent used milk.

Clarke, James H. and Walter F. Thompson. MERCHANDISING MILK THROUGH VENDING MACHINES. W. Va. Agr. Expt. Sta. Bul. 430, 49 pp., June 1959.

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Cook, Hugh L. A BUSINESS ANALYSIS OF MILK VENDING OPERATIONS. Wis. Agr. Expt. Sta. Res. Bul. 174, 22 pp., Mar. 1951.

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Survey of 100 households using home dispensers; consumption increased about 25 percent after introduction of dispenser; likes and dislikes.

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Describes the operations and compares the costs of milk distribution by vending machine, home delivery, and wholesale routes, when vending is carried on as a complement rather than in competition with wholesale and retail route distribution. Both the physical and monetary costs involved in milk vending are presented as a guide in learning whether such operations are feasible.

Metz, Joseph F., Jr. MILK VENDING MACHINES IN INDUSTRIAL PLANTS. Cornell Univ. Agr. Expt. Sta., A.E. 1033, 7 pp., May 1956.

Survey of 175 industrial plants in upstate New York and 150 in New York City. Types of products in vending machines; location; who operates.

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Survey of experiences of 200 operators vending milk indoors in small containers; factors influencing profitability.

Sykes, J. G. MILK VENDING IN VERMONT. Vt. Agr. Expt. Sta. Bul. 592, 12 pp., June 1956.

Experiments with vending machines in various types of locations.

Sykes, J. G. HOME MILK DISPENSERS. Vt. Agr. Expt. Sta. Misc. Pub. 14, 6 pp., June 1960.

Tests with home milk dispensers in Vermont; reaction of consumers and milk dealers; effects on milk consumption and dealers' costs.

Producer-Distributors

- Armentrout, W. W. and R. O. Stelzer. MILK DISTRIBUTION COSTS IN WEST VIRGINIA. II. A STUDY OF COSTS INCURRED BY 75 PRODUCER-DISTRIBUTORS IN THE CLARKSBURG, FAIRMONT, MORGANTOWN, AND WHEELING MARKETS FOR A 12-MONTH PERIOD DURING 1934-35. W. Va. Agr. Expt. Sta. Bul. 270, 32 pp., 1936.
Records were obtained from 17 producer-distributors in the Clarksburg market, 24 in the Fairmont market, 14 in the Morgantown market, and 20 in the Wheeling market for the year ending in 1935. Comparisons were made with 9 milk-distributing plants in the 4 cities and 22 plants in West Virginia studied in 1933. The cost of distribution--plant costs, delivery cost, administration, interest, labor, depreciation, building and equipment cost, truck operation, bad accounts, and other costs are discussed.
- Christensen, R. A. and Dewsnap, H. K. THE RETAIL RAW MILK INDUSTRY IN UTAH, AN ECONOMIC ANALYSIS. Utah Agr. Expt. Sta. Utah Resources Ser. 14, 28 pp., 1962.
Operations, costs, locations, of producer-dealers selling raw milk to consumers; consumption and buying practices of families buying raw milk.
- Farr, Robert. THE DISTRIBUTION OF MILK BY PRODUCER-DEALER IN CONNECTICUT MARKETS, 1937. Conn. Agr. Ext. Serv. Econ. Digest for Conn. Agr. No. 73: 601-608, Dec. 1938.
Number of producer-dealers and commercial-dealers and volume of milk, by markets, 1937. Analysis of sample of 186 producer-dealers; labor, equipment, number of customers, costs.
- Fellows, I. F. AN ECONOMIC ANALYSIS OF THE COSTS INCURRED BY PRODUCERS IN THE RETAIL DISTRIBUTION OF MILK. Univ. of Conn. M.S. thesis, 1940.
- Herrmann, L. F. MILK DISTRIBUTION COSTS IN WEST VIRGINIA. III. A STUDY OF THE COSTS INCURRED BY 67 PRODUCER-DISTRIBUTORS IN THE CHARLESTON, HUNTINGTON, AND PARKERSBURG MARKETS FOR A 12-MONTH PERIOD DURING 1935-36. W. Va. Agr. Expt. Sta. Bul. 282, 26 pp., June 1937.
Results of the study show the average cost to be \$1.94 per cwt. Labor and truck expense were the most important items of cost, amounting to 93 cents and 45 cents respectively. The tendency toward higher costs among plants than among producer-distributors was due to higher wages, additional costs of pasteurization, greater administrative costs, and a larger investment in real estate and equipment.
- Hughes, E. M. THE BUSINESS OF MILK RETAILING BY PRODUCER-DISTRIBUTORS IN NEW YORK STATE. Cornell Univ. Agr. Expt. Sta. Bul. 741, 85 pp., Nov. 1940.
Amount and variation of costs and profits in milk distribution, and the effects of volume of business, labor, route and capital efficiency, and type of business on costs and profits.
- Hughes, E. M. MILK RETAILING BY PRODUCER-DISTRIBUTORS IN NEW YORK STATE. N.Y. Agr. Col., Dept. Agr. Econ. and Farm Mangt. A. E. 239, 18 pp., Feb. 1939.
This study, made from detailed records of 92 producer-distributors located in upstate New York and on Long Island, shows capital invested, costs of distribution and sales outlets, and discusses factors affecting costs and profits.
- Johnson, W. S. and M. V. Waananen. PRODUCER-HANDLERS OF MILK IN WASHINGTON. Wash. Agr. Expt. Sta. Bul. 663, 20 pp., Mar. 1965.
Study of 18 producer-handlers in Yakima and Clark counties and in the Puget Sound marketing area. Description; practices; costs and returns.
- Metzger, Homer and C. W. Pierce. MILK MARKETING BY PRODUCER-DISTRIBUTORS. Pa. Agr. Expt. Sta., Bul. 544, 50 pp., Oct. 1951.
Milk businesses of 77 producer distributors, 1945-46; capital investment; costs and returns from milk distribution; factors influencing milk distribution costs.
- Pierce, C. W. and J. G. Cooper. GALLON JUG SALES ON PENNSYLVANIA DAIRY FARMS. PROCESSING AND SELLING COSTS. Pa. Agr. Expt. Sta. Prog. Rpt. 249, 28 pp., Oct. 1951.
Dairy farmers processing and selling their own milk do not come under the jurisdiction of the Pennsylvania Milk Control Commission. Plant specifications, and costs of a producer producing up to 200 gallons daily.

Rinear, E. H. MILK DISTRIBUTION COSTS OF PRODUCER-DISTRIBUTORS AND SUBDEALERS IN NEW JERSEY. N.J. Agr. Expt. Sta. Bul. 663, 56 pp., Mar. 1939.

Distribution costs involved in processing, bottling, and delivering milk, the relationships between volume of business, capital, and labor, and the conditions whereby one distributor has lower costs than another.

Subdealers, Vendors, Depots

Blanford, C. J. ROUTE RETURNS AT 11 RETAIL MILK DISTRIBUTION BRANCHES IN THE NEW YORK MARKET, OCTOBER 1933. Cornell Univ. Jour. Farm Econ. 105: 2563-2565, Feb. 1938.

Route returns were greater for products whose sales were most variable. They were much higher at some distribution branches than at others. Sales branches in the suburban residential sections market had higher route returns than branches located nearer the center of the city.

Blanford, C. J. AN ECONOMIC STUDY OF THE COSTS OF SELLING AND DELIVERING MILK IN THE NEW YORK MARKET. Cornell Univ. Agr. Expt. Sta. Bul. 686, 60 pp., 1938.

Cost records for October 1933 were obtained from 11 retailers with 774 retail or mixed routes and 33 wholesale routes, and from 7 wholesalers with 111 routes. For the retail routes, kinds of products delivered were analyzed for variations in total costs, types of expenditures, factors affecting costs of branch operations, route costs, size of load, etc. For the wholesalers, types of costs, factors affecting branch operations, size of load, etc. were analyzed.

Loyd, Max I. COSTS OF DISTRIBUTING MILK THROUGH BRANCH SALES PLANTS. N.C. State Col. Unpublished M.S. thesis.

O'Dwyer, Thomas. EFFECT OF COLLECTION, TRANSPORTATION AND REHANDLING COSTS ON ECONOMIES OF SIZE IN FLUID MILK PROCESSING, INCLUDING A BUDGETARY ANALYSIS OF DEPOT COSTS. Cornell Univ. M.S. thesis, 95 pp., June 1965.

Costs of rehandling packaged milk through various types of depots; total costs of collection, transportation, and rehandling of fluid milk, based on conventional cost analysis and on present-value, after-tax approach.

Spencer, L. and H. Kling. THE DISTRIBUTION OF MILK BY SUBDEALERS IN NEW YORK CITY. Cornell Univ., A.E. 320, 10 pp., May 1940.

Subdealers or peddlers handle approximately 4 percent of all milk sold in New York City, or nearly 10 percent of the milk delivered to the doorstep. They have established their businesses mainly in medium-income areas with relatively few stores. Four-fifths of them are located in Brooklyn and Queens. The daily average of sales of milk, mostly Grade B, sold to family trade, is 227 quarts per subdealer.

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Revision of A.E. 320. Number, volume, practices, earnings, price.

Manufactured Products

Blanford, C. J. SALES OF EVAPORATED MILK BY RETAIL STORES IN THE NEW YORK MARKET. Cornell Univ. Agr. Expt. Sta. A.E. 245, 10 pp., Jan. 1939.

Estimated consumption of evaporated milk amounted to the equivalent of 1.7 tall cans per capita. Sales were greater in low-income areas where the price differential between evaporated milk and grade B milk was greatest. No evidence was found that evaporated milk is substituted for cream, except in low-income areas.

Cooley, R. J. and W. H. E. Reid. ICE CREAM STORE, MODERN TRENDS IN THE RETAIL. Mo. Agr. Expt. Sta. Bul. 420, Oct. 1940.

Daggit, Edmund M. THE TWIN CITIES BUTTER MARKET. In H. B. Price, Ed., The Marketing of Farm Products. Studies in the Organization of the Twin Cities Market. Univ. Minn. Press, pp. 288-319, 1927.

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Dubov, I. and D.D. MacPherson. FARM-TO-RETAIL PRICE SPREADS FOR CHEDDAR CHEESE IN THE SOUTH. U.S. Dept. Agr. Mktg. Res. Rpt. 318, 23 pp., Apr. 1959.

Eight lots of cheese produced and marketed in the Southeast were analyzed as to costs and merchandising methods from the time the whole milk was received at the plant until the cheese was offered for sale by retailers. The lots were produced in 4 different plants at different times of the year. Total plant costs ranged from 30.2 to 35.5 cents per pound. Prices to consumers ranged from 39 to 69 cents per pound; farm-to-retail price spreads varied from 17 to 48 cents; and the farmer's share of the consumer's dollar ranged from 31 to 56 percent.

Harris, E. S. MARKETING MARGINS FOR BUTTER. U.S. Dept. Agr. Mktg. Res. Rpt. 289, 45 pp., Nov. 1958.

The farm value of butterfat used in making butter has fluctuated more widely than the retail price of butter. No pronounced single trend is noted in the marketing margin during the 1919-57 period. Ten actual shipments were studied to provide greater understanding of the butter marketing process. These studies illustrate the variety of services that the several marketing agencies perform in processing butter and moving it to the consumer.

Ice Cream Field. ANNUAL SURVEY OF INDUSTRY TRENDS. Ice Cream Field magazine, annual since 1953.

Packages; prices; distribution by type of outlet.

Ice Cream Trade Journal. PACKAGES. AN ANNUAL EXCLUSIVE ANALYSIS RELATED TO INDUSTRY SALES. Ice Cream Trade Journal, May 1962.

Sales of ice-cream containers.

Irwin, H. S. SOME EARLY CHICAGO BUTTER MARKETING PRACTICES. Agr. Hist. 35(2): 82-84, Apr. 1961.

Wholesale marketing practices in the 1890's. All butter was bought by inspection--broker or jobber (the buyer) and the selling commission man would inspect each container and agree on a grade.

Jones, W. Webster. THE MARKETING OF COTTAGE CHEESE AND FROZEN DAIRY PRODUCTS IN KANSAS, MISSOURI, AND OKLAHOMA. U.S. Dept. Agr. Mktg. Res. Rpt. 504, 24 pp., Oct. 1961.

Study of marketing of cottage cheese and frozen dairy products by 35 plants in 1959. Production, advertising and sales promotion, distribution practices, and importance of these products in the plants' operations.

Krause, O. E. MARKETING WHEY FROM CHEESE FACTORIES. Wis. Crop Rptg. Serv. Spec. Bul. 44, 32 pp., June 1954.

Utilization of milk solids in Wisconsin, 1951; whey production and disposition; whey products over the years.

Maclin, Theodore. THE MARKETING OF KANSAS BUTTER. Kans. Agr. Expt. Sta. Bul. 216, 79 pp. 1917.

Survey of methods, processes, and costs of marketing butter in Kansas and prices received by farmers.

Miller, Arthur H. MARKETING OF NONFAT DRY MILK SOLIDS BY WISCONSIN PLANTS. Wis. Agr. Expt. Sta. Res. Bul. 175, 32 pp., Apr. 1951.

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Review of industry development, possibilities for exports, and domestic consumption.

Potts, Roy C. MARKETING PRACTICES OF WISCONSIN AND MINNESOTA CREAMERIES. U.S. Dept. Agr. Bul. 690, 15 pp., July 1918.

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Purcell, Margaret R. NONFAT DRY MILK PACKAGED FOR HOUSEHOLD USE. MARKETING PRACTICES AND COSTS OF MANUFACTURE AND DISTRIBUTION. U.S. Dept. Agr. Mktg. Res. Rpt. 403, 49 pp., June 1960.

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White, Robert E. SOME FACTORS PERTAINING TO THE POTENTIAL MARKET FOR STERILE CONCENTRATED MILK OVERSEAS. Univ. Ill. M.S. thesis, 44 pp., Aug. 1958.

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Wiest, Edward. THE BUTTER INDUSTRY IN THE UNITED STATES; AN ECONOMIC STUDY OF BUTTER AND OLEOMARGARINE. Columbia Univ. Studies in History, Economics, and Public Law, 69 (2) and (165) 1916. Ph. D. Thesis.

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- Waite, W. C. and A. B. Larson. SALES OF BUTTER AND MARGARINE IN MINNEAPOLIS RETAIL STORES. Minn. Agr. Ext. Serv. Farm Business Notes 327: 4, Nov. 1950.
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- Bakken, H. H. MARKETING WISCONSIN FOREIGN CHEESE BY FEDERATION. Wis. Agr. Expt. Sta. Bul. 380, 28 pp., 1926.
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- Baughman, Ernest T. A STUDY OF THE EFFICIENCY OF COOPERATIVE CREAMERIES IN WEST CENTRAL MINNESOTA WITH SUGGESTED ADJUSTMENTS. Univ. Minn. M.S. thesis, 1941.
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- Benton, A. H. MARKETING DAIRY PRODUCTS: CREAMERIES AND COOPERATIVE CREAM SHIPPING STATIONS IN NORTH DAKOTA. N. Dak. Agr. Expt. Sta. Bul. 182, 40 pp., 1924.
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1940-43 34 percent average

1944-48 5 percent average

1949-51 15 percent average

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McDonel, K. H. THE UNITED STATES EXPORT AND IMPORT TRADE IN DAIRY PRODUCTS, WITH SPECIAL CONSIDERATION OF THE TARIFF. Mich. Agr. Expt. Sta. Tech. Bul. 131, 37 pp., 1933.

Production of dairy products, 1925-28, of the principal exporting and importing countries; the exports and imports of the United States of fresh milk and cream by five-year periods,

1891-1920, and by years 1921-30, and of condensed, evaporated, and powdered milk by years, 1910-31; the destination of United States export of condensed and evaporated milk 1926-29; exports and imports of the United States of cheese and butter, by five-year periods, 1871-1920, and by years 1921-31; the destination of such exports, 1926-29; the United States imports for consumption by years, 1910-31, of cream, fresh milk, cheese and cheese substitutes, butter, and casein. Tables give the rates of duty on dairy products under different United States tariff acts, 1789 to 1930.

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Fluid Milk

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One study of retail sales and price differentials for skim milk in 34 Federal order markets, 1947-51. Gets price elasticity coefficients from -4.4 to -3.4 for various time periods within the overall period. For full period, gets average of -3.5. Controlled experiment with Univ. Dairy in Storrs - first year data only: gets -1.68 ± 1.63 . Lower value than for first study may be due to purchasing lags. Get higher elasticity for latter part of each 2-month period (of each price differential). Not much evidence of income effect.

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Bartlett, R. W. PRICES AND CONSUMPTION OF MILK IN SPECIFIC CITIES AS RELATED TO INDUSTRIAL PAYROLLS AND OTHER ECONOMIC FACTORS. Ill. Agr. Expt. Sta. Bul 397, pp. 397-480, 1934.

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This short discussion concerns the results of a study presented by R. F. Patzig and Gideon Hadary entitled "Relationship of Income to Milk Consumption" (J. F. E., Vol. 27, pp. 204-210, 1945), in which the authors concluded that income differences failed to account for the differences in family consumption of milk. The results of the Patzig-Hadary study, a Bureau of Labor Statistics study of "Money Disbursements of Wage Earners and Clerical Workers" made in 1934-36 (BLS Bul. 636), and the Consumer Purchases Study made by the Bureau of Home Economics in 1936 (U.S.D.A. Misc. Pub. 452), are compared and analyzed.

Blanford, C. J. THE DEMAND FOR MILK AND CREAM AS REVEALED BY CONSUMER PURCHASES AT RETAIL FOOD STORES IN NEW YORK CITY. Cornell Univ. Agr. Expt. Sta. Bul. 765, U.S. Dept. Agr. coop., 47 pp. 1941.

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April 1940 in approximately one-fourth of the 18,000 stores distributing milk in low-, medium-, and high-income areas. Information was obtained as to the demand for paper containers and for delivery service on the part of the families that purchased their milk principally at stores.

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Study in an isolated community in eastern Connecticut, 1947-49.

Brinegar, George K. SHORT-RUN EFFECTS OF INCOME CHANGE ON EXPENDITURE. Jour. Farm Econ. XXXV (1): 99-109, Feb. 1953.

Evidence that households tend to maintain their bank balances in relation to their income level, not to changes in income. i.e., do not draw on savings to make up loss of income in times of sudden drop. On specific items consumers tend to overcompensate for income changes at first, then overcompensate in the other direction, and then settle down at a middle point, e.g., with income drop, milk consumption goes far down, comes up again, and then settles down at a lower level than before the income drop. A dampening of income fluctuations which decreases the short-period price variation, will permit the firm and household to operate more efficiently.

Brinegar, George K. and Stewart Johnson. THE MARKET FOR FLUID SKIM MILK. Conn. Bul. 303, 43 pp. July 1953.

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Survey of industrial workers in 2 communities in Chicago area on beverages consumed at lunch at work.

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Collins, W. E. FACTORS AFFECTING THE DEMAND FOR FLUID MILK. Ill. Agr. Expt. Sta. A.E. 2770, 25 pp., Dec. 1950.
Review of research work on effects of income, prices, store price differentials, racial background quality, age and family size, temperature, seasonality.

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Cowden, T. K. DISTRIBUTION AND CONSUMPTION OF MILK IN READING, PENNSYLVANIA. Pa. Agr. Expt. Sta. Tech. Paper 614, 14 pp., 1933.

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Hamilton, A. B., S. H. DeVault, and W. H. Harper. THE CONSUMPTION OF FLUID MILK IN BALTIMORE. Md. Agr. Expt. Sta. Special Bul. 4, 1937, 8 pp.

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Herrmann, Robert O. CHANGES IN POPULATION COMPOSITION AS AN EXPLANATION OF CHANGES IN THE DEMAND FOR FOOD: THE CASE OF FLUID MILK. Mich. State Univ. Dept. of Agr. Econ., Agr. Econ. 866, 10 pp., April 1962.

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Jeffrey, Arthur D. and E. Paul Feldman. CONSUMPTION RESPONSE TO A LARGE INCREASE IN THE RETAIL PRICE OF FLUID MILK. Cornell Univ. Agr. Expt. Sta. Bul. 951, 24 pp., June 1959.

Retail prices of milk in upstate New York rose about 3 cents per quart in August 1957; analysis of milk sales in Syracuse and Ithaca through February 1958.

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Jones, Edwin B. and E. W. Lamborn. LOWERED PRICE DOES NOT GREATLY INCREASE CONSUMPTION OF MILK. Utah Agr. Expt. Sta. Farm and Home Sci. 11 (3); 63-64, Sept. 1950.

Study of purchases of milk during a 2-week price war in Logan, Utah, during late fall 1949, by 405 families. Only 358 families knew of price war; all data for them included. Elasticity of demand was .25 for all families. Elasticity of demand for milk purchased at stores was .53--the elasticity of demand for store milk was more than 10 times that for delivered milk. Not much evidence of differences in elasticity by income groups. Slight tendency for families in \$1,000 - \$1,500 bracket to be more responsive. No differences in elasticity by size of family. Large families had higher per capita consumption all through. Before price-war: average purchases 13.6 qt. per week @17.7¢. During price-war: average purchases, 14.8 qt. per week @12.6¢.

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Interviews with 2,000 adults in Greater New York. Habits; beliefs; effects of influences on people; personal factors including tastes; psychological interpretations and recommendations.

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Metz, Joseph Frank, Jr. EFFECTIVENESS OF MERCHANDISING PRACTICES OF MILK CONSUMPTION. Cornell Univ. Ph.D. thesis, 1956.

Miles, J. F. SEASONALITY OF PURCHASES AND SALES OF MILK IN SOUTH CAROLINA. S. C. Expt. Sta. Bul. 400, 29 pp., June 1962.

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Appraisal of market potential for 2-percent milk, using survey of plants and of households.

Montgomery, D. E. THE REACTION OF CONSUMERS TO CHANGES IN RETAIL PRICE OF MILK. U.S. Dept. Agr., Agr. Adjust. Admin. 11 pp., 1938.

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Mortenson, William P. COMPETITIVE MARKET FORCES AND THEIR EFFECT UPON FLUID MILK CONSUMPTION. Jour. Farm Econ. 19: 505-507, 1937.

A brief discussion of the consumption of fluid milk and cream, and evaporated milk. The substitution of evaporated milk for fluid milk and cream among low income families is discussed.

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Survey of 142 households in New Orleans in 1956. Effects on milk consumption of price, income, size of family, consumption and price of substitutes. Explained only 13 percent of variance in per capita consumption.

Palmer, J. T. SOME EFFECTS OF MAINTAINING RETAIL PRICES OF WHOLE MILK AT ARTIFICIAL LEVELS. Jour. Farm Econ. 18: 759-761, Nov. 1936.

A study to determine the extent to which retail prices of whole milk in Boston, Chicago, New York City, Connecticut and the U.S. had been maintained at artificial levels from 1913 to 1935 and the effect of such control on the consumption of whole milk. High retail prices of whole milk in addition to causing increased consumption of canned milk and tending to reduce more milk sales, have encouraged new distributing agencies to enter a milk market. In the smaller markets, high retail prices have been accompanied by an increase in the number of producer-distributors.

Patzig, R. E. and Gideon Hadary. RELATIONSHIP OF INCOME TO MILK CONSUMPTION. Jour. Farm Econ. 27: 204-210, 1945.

This article analyzes data from 3 surveys conducted at the University of Wisconsin and the University of Chicago. Over 2,000 families were interviewed in Madison, Racine, and Kenosha, Wis., and South Bend and Mishawaka, Ind., between October 1940 and May 1942. Only people who purchased all their milk from dairies (home-delivery) were included, there being no price differential between delivered and store-purchased milk at that time. Records on the purchases of each family for a 2-month period were obtained from the dairies. Data on incomes were obtained from income tax records and credit bureaus. Complete consumption and income records were obtained for 601 families. Correlation analyses were made of the relationship between income and milk consumption per household; income and per capita consumption; and per capita income and per capita consumption. A multiple correlation analysis was made of the relationship between per capita consumption and (1) per capita income, and (2) number of children in the family. None of the correlation coefficients was statistically significant. The authors conclude that above a certain "breaking point" income has little or no influence on milk consumption.

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Pollock, Ronald Howard. AN ANALYSIS OF CHANGES IN CONSUMER MILK PURCHASES IN TWO OHIO METROPOLITAN AREAS. Ph.D. thesis, Ohio State Univ., 1954.

Potter, P.

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Quackenbush, G. G. and J. D. Shaffer. COMPETITIVE RELATIONSHIPS OF FLUID SKIM MILK and FLUID WHOLE MILK. Mich. Quart. Bul. 38(1): 110-122, article 38-13, MSU Consumer Panel Report No. 15, Aug. 1955.

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Ross, H. A. SOME FACTORS AFFECTING THE DEMAND FOR MILK AND CREAM IN THE METROPOLITAN AREA OF NEW YORK. U.S. Dept. of Agr. Tech. Bul. 73, illus. 68 pp., 1928.

Detailed analysis of the quality of milk received, seasonal production, seasonal surplus, geographic production, production by freight zones, and production along various railroads. Using 1927 data and also data from 15,217 approved grade A and grade B farms for the period 1922-28, analysis of the seasonal variations in the fat content of milk sold to different types of plants and of that produced by summer, winter, and intermediate dairies. Using data for the years 1922-30 from 250 milk plants receiving delivery from approximately 15,000 farms and data for 1908-30 from 45 plants receiving approved grades A and B milk, production, both total and seasonal, is analyzed.

Schaars, Marvin A. and Gideon Hadary. CREAM PURCHASES BY URBAN CONSUMERS. Repr. from the Milk Dealer, 4 pp., July 1943.

Survey of families buying from routemen in Racine and Kenosha, Wis., 1941.

Scott, F. S., Jr., H. T. S. Lau, and W. Nakashima. CONSUMER DEMAND FOR MILK IN HONOLULU AND KAILUA. Hawaii Agr. Expt. Sta. Agr. Econ. Rpt. 41, 38 pp., Apr. 1960.

Survey of 1,150 families in Honolulu and 388 in Kailua winter 1958. Consumers and non-consumers; consumption of fresh and processed milk products; preferences; response to price; response to advertising and promotion; store vs. home deliveries; size of containers.

Spencer, L. and I. A. Parker. CONSUMPTION OF MILK AND CREAM IN THE NEW YORK CITY MARKET AND NORTHERN NEW JERSEY. Cornell Univ. Agr. Expt. Sta. Bul. 965, 80 pp., July 1961.

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Steele, Howard L.

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Stull, J. W. and J. S. Hillman. RELATION BETWEEN COMPOSITION AND CONSUMER ACCEPTANCE OF MILK BEVERAGES. Jour. Dairy Sci. 43 (7): 945-950, July 1960.

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Taylor, Paul N., George K. Brinegar, and Stewart Johnson. THE RETAIL MARKET FOR FLUID CREAM. Storrs (Conn.) Agr. Expt. Sta. Bul. 333, 28 pp., Sept. 1957.

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Weak merchandising; complacency and resistance to change; lack of coordination; labor practices; misused sanitary regulations; wholesale and retail milk price control; Federal problems; concern about weight.

U.S. Department Agriculture. A SURVEY OF MILK CONSUMPTION IN 59 CITIES OF THE U.S. CONSUMERS' COUNSEL SERVICE. U.S. Dept. Agr., Agr. Adjust. Admin. Pub. 2, 33 pp., 1936.

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Vial, E. E. POPULATION AND CONSUMPTION OF MILK IN THE NEW YORK-NEW JERSEY MARKETING AREA, 1958-63. Milk Dealers' Assoc. of Metrop. N.Y. Membership Ltr. 138, 7 pp., Oct. 9, 1964.

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"There is undoubtedly more published data on the consumption and demand for dairy products than for any other agricultural commodity." Data available and studies made concerning various aspects of the subject are discussed.

Walters, Donna G. and Stanton P. Parry. CHANGING MILK PRODUCT CONSUMPTION PATTERNS IN MEMPHIS, TENNESSEE. Tenn. Agr. Expt. Sta. Bul. 380, 31 pp., Sept. 1964.

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Mortenson, William P. DISTRIBUTION OF MILK UNDER PUBLIC UTILITY REGULATION. Amer. Econ. Rev. 26: 23-40, 1936.

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